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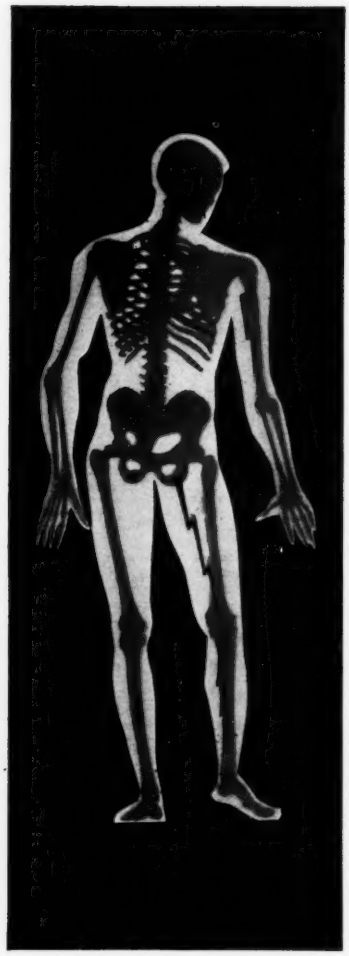

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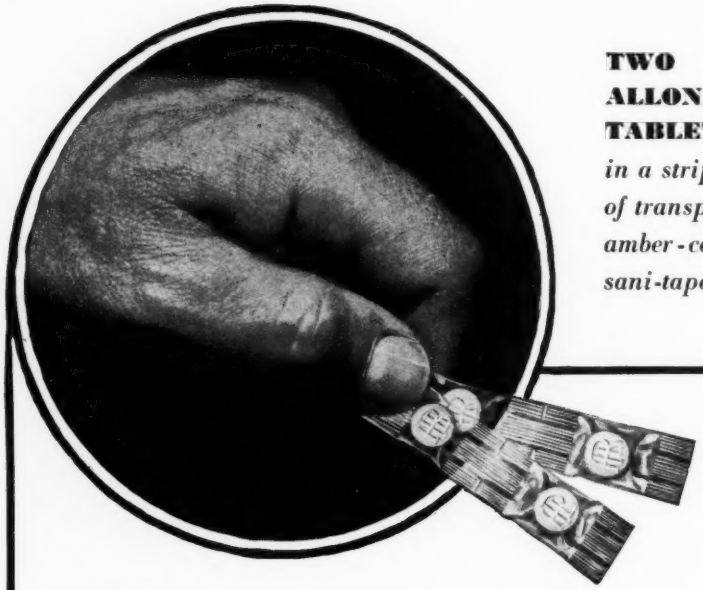

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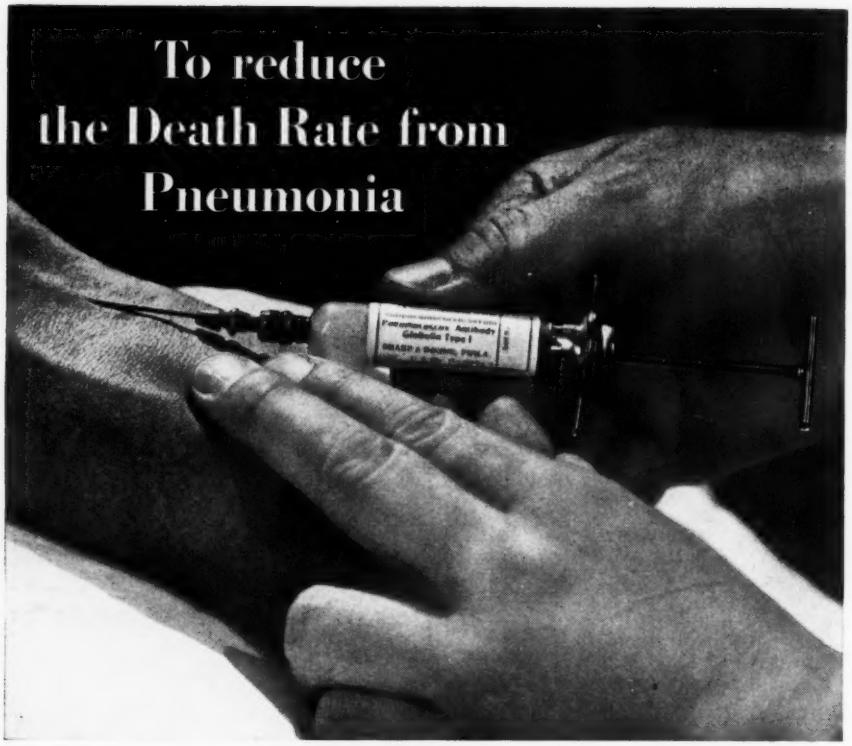

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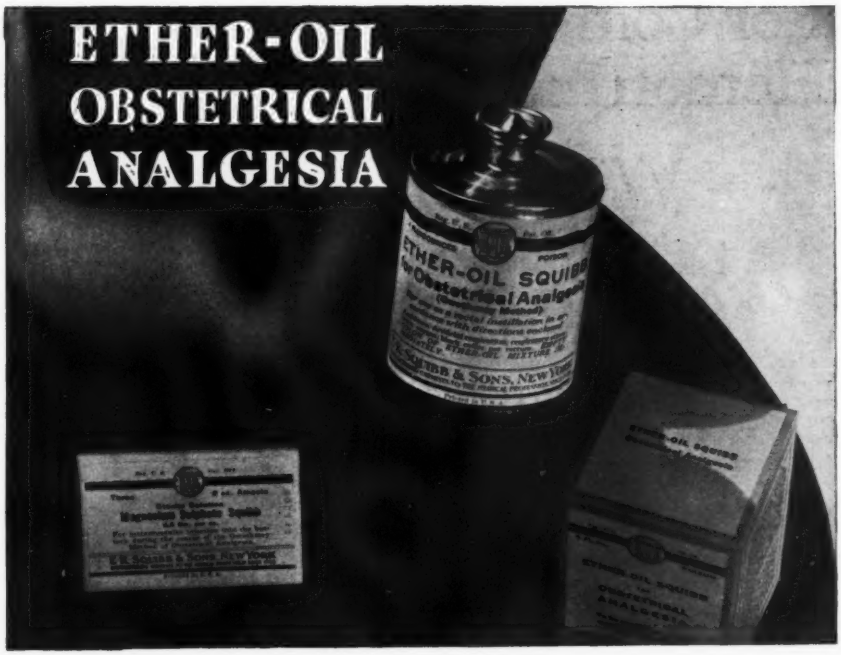

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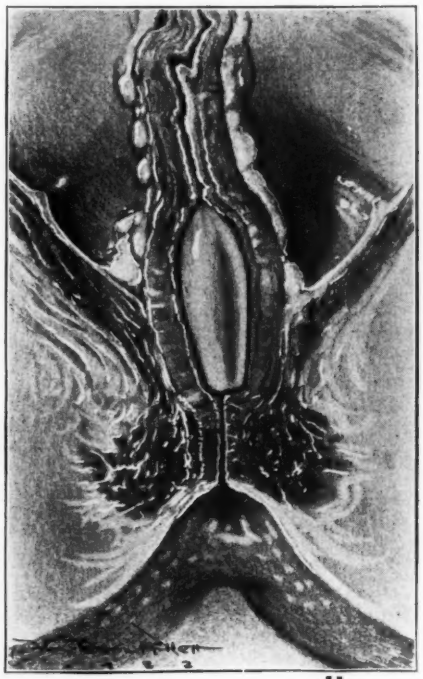

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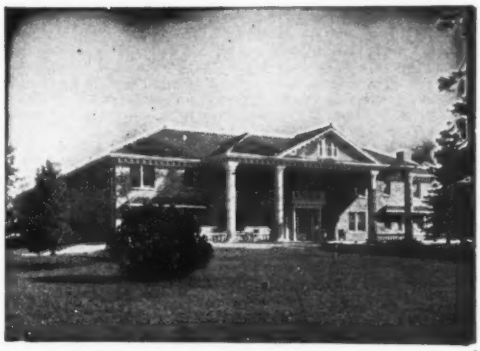

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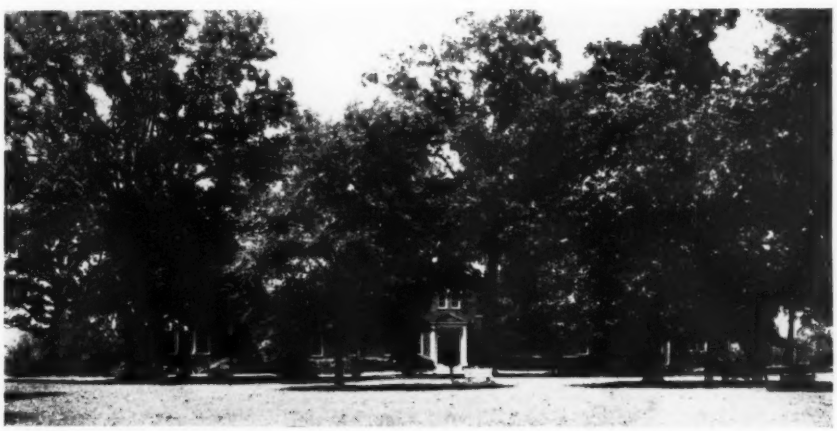

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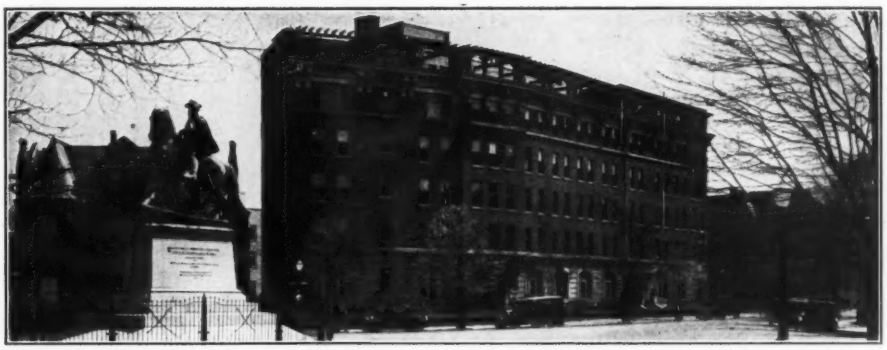

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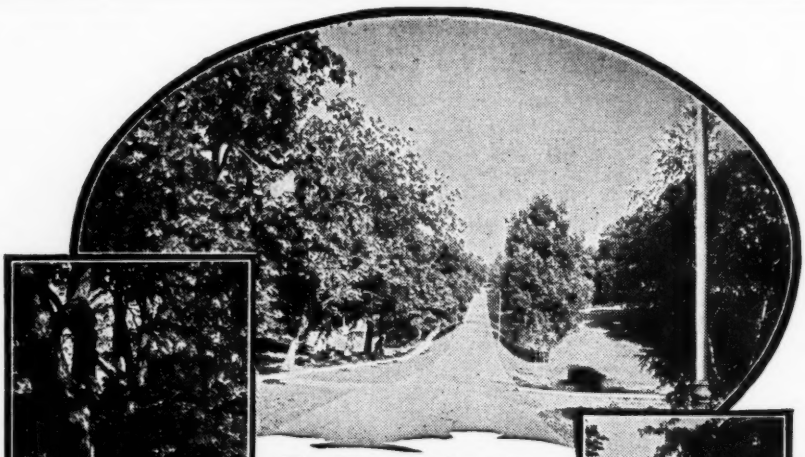

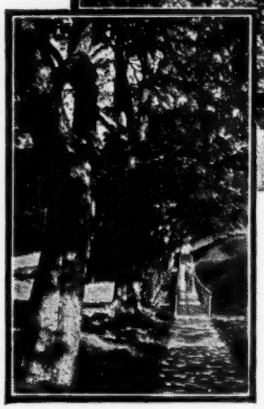

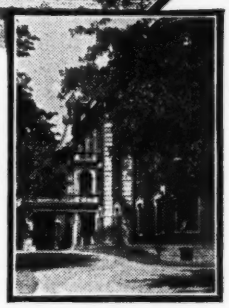

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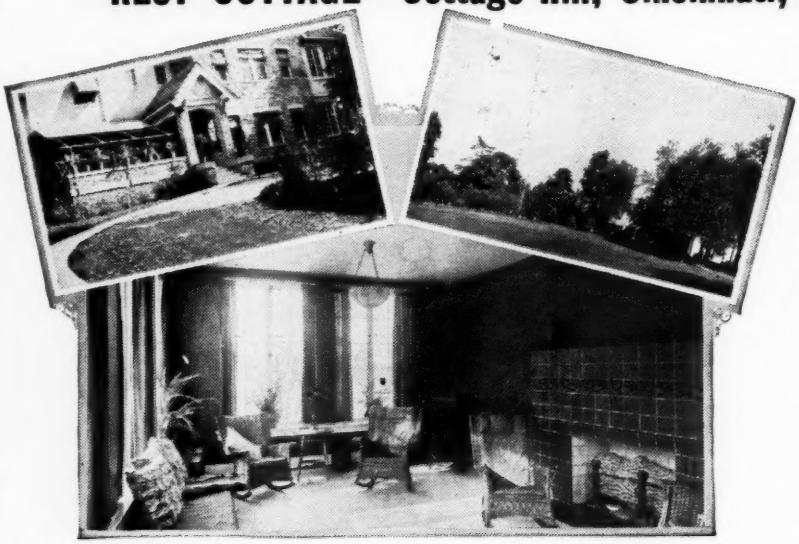

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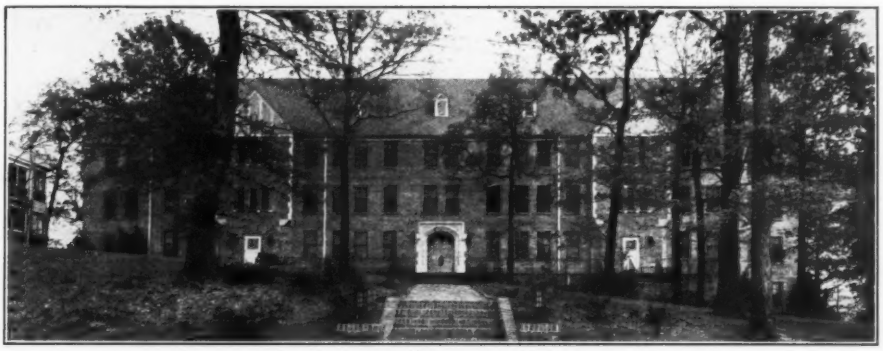

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JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY BY THE SOUTHERN MEDICAL ASSOCIATION AT BIRMINGHAM, ALA.

Volume XXVI DECEMBER 1933 Number 12

J. MARION SIMS: AN APPRECIATION*

By IRVIN ABELL, M.D.,
Louisville, Ky.

The traveler along the highway of life, regardless of the field of endeavor in which his activities may lie, cannot but be interested in the history and attainments of those whose accomplishments constitute its milestones. This is particularly true of our profession, the majority of whom fate has decreed to be "hewers of wood and drawers of water," content in the application of knowledge gleaned by our predecessors in their journey down the aisle of time. While it is true that the greatest advance in medical knowledge has come from the accumulated, if modest, efforts of many contributors, to the selected few has been given the privilege of rendering service of such creative and humanitarian import as to designate them benefactors of humanity. To this class belongs the subject of our sketch, J. Marion Sims. Of the altruistic instincts deeply implanted in the human breast veneration for those whose acquirements and erudition have blazed a path to better things is a most wholesome and laudable one, and with your indulgence our time this evening will be devoted to the honor of him whose service shed luster not only on the Southland, but on the profession of medicine at large.

James Marion Sims was born in the Hanging Rock Creek section of Lancaster County, South Carolina, of John and Mahala Mackey Sims on the twenty-fifth day of January, 1813. His parents came of hardy revolutionary stock, possessing the rugged qualities developed by their environment and the stirring events incidental to the establishment of this country as an independent republic. Young Sims received his primary education in the schools of his community: in 1825, the family having moved to Lancaster, he entered the Lancaster High School; in 1830 he entered the College of South Carolina, now the University of South Carolina, from which he was graduated in 1832. It is interesting to note his comment years afterward when crowned with the laurel wreath of success:

"I never was remarkable for anything while I was in college, except good hebavior; nobody ever expected anything of me and I never expected anything of myself."

At that day and time the only avenues open to a young man of university education were those of the learned professions. Electing to study medicine, Marion apprised his father of his choice, to be greeted as follows:

"Well, I suppose that I cannot control you: but it is a profession for which I have the greatest contempt. There is no science in it. There is no honor to be achieved in it: no reputation to be made, and to think that my son should be going around from house to house through this country with a box of pills in one hand and a squirt in the other, to ameliorate human suffering, is a thought I never supposed I should have to contemplate."

In the light of subsequent events it is fortunate that Col. Sims lacked the attributes of a seer, otherwise the world would have been denied the beneficent gifts of his talented son. Marion, in February, 1833, began to read medicine with Dr. Churchill Jones, a practitioner of no mean ability, from whom he imbibed the desire to distinguish himself in surgery if he ever became a doctor. In November, 1833, he entered the Charleston Medical School, remaining through the session which ended in February, 1834. He was particularly impressed by Dr. Samuel Henry Dickson, Professor of Medicine, who later became Professor of Medicine at the Jefferson Medical College of Philadelphia, and by Dr. John Edwards Holbrook, Professor of Anatomy.

"The latter was unsurpassed as a teacher, possessing in an eminent degree the faculty of uniting accurate description with a rare grace of expression."

Dr. John Wagner, a pupil of Dupuytren and the holder of a degree from the Royal College of Surgeons of England, was Professor of Sur-

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gery. Marion remained with his preceptor, Dr. Jones, during the summer and in September entered the Jefferson Medical College of Philadelphia, from which institution he was graduated in March, 1835. Dr. George McClelland, founder of, and Professor of Surgery in, the Jefferson Medical College, made upon young Sims, as he was wont to do upon his confreres, an indelible imprint as a man, a teacher and a surgeon. The brilliant Granville S. Patterson was Professor of Anatomy, of whose enthusiasm and eloquence young Sims never tired. From the statement of the latter that upon graduation he could have gone into the dissecting room, cut down upon any artery and put a ligature around it but that he knew nothing of medicine, one can deduce that the influence of these two teachers had much to do with his interest in surgery, in which field he was destined to become a luminary.

Sims returned to his home in South Carolina in May, 1835, and established an office in Lancaster. Here he remained but a few months, during which time he had but three patients, two of whom died. On the thirteenth day of October of the same year he started for Alabama. The thirteenth seems to have been an eventful day for Sims. He was born in 1813, graduated from college on the thirteenth, left Lancaster for Alabama on the thirteenth, moved to Montgomery on the thirteenth, arrived in New York on the thirteenth, and died on the thirteenth. In about three weeks he arrived in Mt. Meigs, Alabama, where he bought the books and instruments of Dr. Childers and entered upon practice. His first patient in his new location was ill with puerperal fever and died soon after he began treatment. He was then but twenty-two years of age. Three of his first four patients had died, a mortality of 75 per cent.

His next patient, a Mr. Adams, was critically ill and had failed to secure benefit from the available physicians in his community. Sims found a fluctuating mass in the right upper abdomen and advised incision and drainage. Consultation with one of his schoolmates found the latter opposed to operation in the belief that the swelling represented a malignant growth. A council of the patient's neighbors was called to decide which advice to follow, and it gave its verdict in favor of Sims, who then opened the abdominal abscess with a bistoury, evacuating two quarts of pus, and restored his patient to health. This was his first operation and its success gave him a reputation which afforded him opportunity to show his daring and skill. His activity was severely hampered by illness, since he all but succumbed to malaria, which he acquired upon returning from service with the troops in the war against the Creek Nation. The accepted treatment was bleeding and purgation. As described by Sims,

> "Patients were bled, purged, administered tartar emetic, and given fever mixtures every two hours during the twenty-four; the patients were salivated and the patients died, some of them sooner than others. Those who were bled and purged the strongest died the quickest."

A young Englishman from Montgomery, T. B. Caster by name and a druggist by profession, happened in Mt. Meigs, and learning of the illness of Sims, whom he had known during the war with the Creek Nation, gave him quinine and brandy, which proved the turning point toward a slow and tedious recovery. He returned to South Carolina to regain his strength and while there, in December, 1836, was married to his boyhood sweetheart, Theresa Jones, niece of his preceptor, Dr. Churchill Jones.

In 1837, he removed the lower jaw without mutilation, the operation being done entirely from within the mouth. In the same year he successfully removed the superior maxilla for tumor of the antrum. In 1840, he suffered another attack of malaria and as he began to improve his wife and two children came down with the disease. Discouraged by his prolonged disability from this dread malady, he sought to escape it and at the same time find larger opportunities by moving to Montgomery, which he did on December 13, 1840. His health gradually improved and after some months he was able to resume practice.

He was the first physician in the South to treat club foot successfully and also one of the first to operate for cross-eyes. He devoted himself to his work and became known as a successful surgeon, as he expresses it, "performing all sorts of beautiful and brilliant operations." In 1844 he successfully repaired a hare-lip in a young woman whose deformity was so hideous that she wore a doubly-folded blue veil to conceal it, after which a set of teeth were supplied by the dentist from a plaster cast of her mouth. Dr. Harris, founder of the Baltimore College of Dentistry, while on a visit to Montgomery, learned of the case and persuaded Sims to write a report of it for the *Journal of Dental Surgery*. This was his first publication and his timidity about it was such that upon the arrival of the *Journal* he hid it behind a shelf of books in his library. Its accidental discovery by a confrere of literary tastes, Dr. Ames, and the latter's

warm commendation of it both as to style and contents overcame his shyness and, acting upon the advice of Dr. Ames, Sims began writing the histories of his surgical cases. In commenting upon this practice and the events leading up to its inception in 1845, Sims regarded it as an eventful year in his professional career.

In 1845 Sims had been practicing ten years, and although recognized as the leading surgeon of his community, he had never pretended to treat the diseases of women, referring this class of patients to his colleagues, Drs. Henry and McWhorter. In June of this year he saw in consultation with Dr. Henry a colored girl, Anarcha, who had been in labor three days with the fetal head so impacted in the pelvis that labor pains had almost entirely ceased. Delivery was effected with forceps and five days later recto- and vesico-vaginal fistulae resulted from sloughing. This was the first vesico-vaginal fistula he had seen and it was regarded by him at that time as incurable. One month later a second colored girl, Betsy, was brought to him presenting a similar condition, and still one month later a third colored girl, Lucy, with a like injury and urinary incontinence. On the day following his examination of Lucy he was called to see a Mrs. Merrill who had been thrown from a pony, falling with all her 200 pounds of weight on her pelvis. She complained of great pain in her back and a sense of tenesmus both in the bladder and rectum. Digital examination revealed a retroversion of the uterus, which, Sims concluded, had been suddenly dislocated by the fall and was responsible for her symptoms. Remembering the advice of one of his teachers in Charleston, Dr. Prioleau, he placed the patient in the knee chest position and, upon introducing his fingers into the vagina, they immediately came in contact with the misplaced organ; whilst making pressure upon it, the vagina dilated with air and the uterus slipped back in place beyond the reach of his fingers. For the moment he was non-plussed by the fact that, as he expresses it, it was as if he had put his fingers into a hat and worked them around without touching the substance of it. Appreciating the mechanics of what had occurred, he immediately reasoned that a similar position with exposure would permit visualization of vesico-vaginal fistulae and the relations of surrounding tissues. Fired with this idea, he rushed back to town, bought a pewter spoon, drove to his office for two medical students and proceeded to his hospital to reexamine Betsy. Placing the girl in the knee chest position, he retracted the perineum with the bent handle of the spoon and

"saw everything as no man had seen before. The fistula was as plain as the nose on a man's face. The edges were clear, well defined and distinct."

He said at once:

"Why cannot these things be cured? It seems to me that there is nothing to do but to pare the edges of the fistula and bring it together nicely, introduce a catheter in the neck of the bladder and drain off the urine continually, and the case will be cured."

And so began the work, the successful completion of which was to mark an epoch in surgery and aid in establishing the specialty of gynecology on a sane, scientific basis. He enlarged his hospital and proposed to the owners of Anarcha, Betsy and Lucy that if they be granted him for experiment he would make no charge for his services or their keep. His description of the sad plight in which such patients find themselves is clear and lucid:

"The consequences of the involuntary discharge of urine are indeed painful. The vagina may become inflamed, ulcerated, incrusted with urinary calculi and even contracted: while the vulva, nates and thighs are more or less excoriated, being often covered with pustules having a great resemblance to those produced by tartar emetic. These pustules sometimes degenerate into sloughs, causing loss of substance and requiring a long time to heal. The clothes and bedding of the unfortunate patient are constantly saturated with the discharge, thus exhaling a disagreeable effluvium, alike disgusting to herself and repulsive to others. The accident, *per se*, is never fatal: but it may well be imagined that a lady with a clean sensibility so inflicted and excluded from all social enjoyment would prefer death."

It was to the relief of this pitiable condition that he now consecrated his time and efforts. The first operation was done upon Lucy in December, 1845, and resulted in failure, due as he thought to his having employed a sponge in the neck of the bladder to draw away the urine by capillary attraction, which became incrusted with urinary salts and set up inflammation. He then invented a self-retaining catheter and tried the operation on Betsy, and again met with failure. The third operation was performed on Anarcha and likewise failed. He continued his efforts, improving his technic, devising new instruments, modifying the application of sutures, securing additional patients upon whom to experiment, not only for one, but two, three, even four years, but his operations, while diminishing the size of the fistulae, all failed so far as a positive cure was concerned. His fruitless efforts and repeated failures tired his professional friends so that they refused to assist him, and he was forced to train some of

his patients to act in this capacity. His brother-in-law, Dr. Rush Jones, remonstrated with him upon further experimentation, pleading a fear of breakdown in health and urging that it was unfair to his young and growing family to continue the cost of "supporting a half dozen negroes now more than three years." Undaunted and unafraid, supported by an unconquerable optimism, he continued for at least a year after this conversation with Dr. Jones, simplifying his methods until he became convinced that the cause of failure lay in the use of silk ligatures. Whilst walking to his office he picked up a small piece of brass wire such as was formerly used as a spring in suspenders before the days of India rubber. This gave him an idea and, taking it to the jeweler, he had made a wire of pure silver of the same size. Anarcha was the subject of the next experiment, made in May or June of 1849, this being the thirtieth operation he performed upon her. The fistulous edges were pared, the sutures introduced and held in place by perforated lead shot run on the wire and pressed with forceps. Sims could hardly restrain his eagerness to know the result and at the appointed time,

"with a palpitating heart and an anxious mind, he introduced the speculum to find the suture apparatus as he had placed it, no inflammation, no tumefaction, nothing unnatural, and a perfect union of the fistula."

In the course of two weeks more Lucy and Betsy were both cured by the same means. The sunlight of success had dissipated the shadows of failure and Sims realized that he had made one of the discoveries of the age for the relief of suffering humanity. One cannot speak too highly of the hardihood and pluck of Anarcha, Lucy and Betsy, who endured with heroic fortitude multiple operations unmitigated by the soothing somnolence of anesthesia; or of the courage, confidence and self-reliance of Sims, who in the face of repeated failures carried on to success. Within six months after the completion of his epoch-making experiments Sims developed a chronic dysentery which for three years not only put a stop to work but caused him to wage a battle for life. Whilst lying in bed, expecting the coming of the old man with the scythe, he wrote out the history of his operations for the press, stating it to be his last free-will offering to the medical profession before he should quit this world. Illustrated with 22 wood cuts, it appeared in the January, 1852, issue of the *American Journal of the Medical Sciences* under the title "On the Treatment of Vesico-Vaginal Fistula," by J. Marion Sims, M.D., of Montgomery, Alabama. It is interesting to note that operative gynecology, which had no special existence before the Nineteenth Century, was largely the creation of surgeons from the Southern states.

"In the Eighteenth Century William Baynham, of Virginia, operated twice with success for extra-uterine pregnancy (1790-1799) and in 1816 John King, of Edisto Island, South Carolina, performed a remarkable operation for abdominal pregnancy, saving both mother and child by cutting through the walls of the vagina and applying the forceps. In 1818 he published 'An Analysis of the Subject of Extra-Foetation and of the Retroversion of the Gravid Uterus,' the first book on the subject. Ephraim McDowell, of Kentucky, performed his epoch-making ovariotomy in 1809 with a record of 12 more before his death in 1830. Prior to the work of Sims the stumbling block of gynecology was the relief of vesico-vaginal fistula. Roonhuyze (1672) and Fatio (1752) left admirable accounts of their operative methods, but no reports of successful cases. Dieffenbach left a classical account of the wretched plight of the women upon whom all his resources were tried in vain (1845). Jobert de Lamballe had written a whole treatise upon female fistulae (1852), but his autoplastic operation, *par glissement*, had only resulted in repeated failures and the death of many of his patients. Six successful operations for the condition had been reported in America by John Peter Mettauer, of Virginia (1838 and 1847): others by George Haywood, of Boston, in 1839, by Joseph Pancoast, of Philadelphia, in 1847, and in France by Maissonneuve in 1848" (Garrison, History of Medicine, 542-545).

"In 1834, Gossett, of London, used a metal suture in the form of gilt wire. There seems to have been much in common in the methods of Sims and Gossett, for the former used not only a metal suture but a perineal retractor, and also operated in the knee chest position. Although his results were seemingly far better than those of his contemporaries in this field, his technic did not gain wide recognition, was not generally accepted and therefore was not perpetuated" (Douglas Bissell, New York, Proc. Roy. Soc. Med., 1928).

The whole situation was clarified, as Kelly says, "almost with a magic wand" by Sims, whose position, speculum, silver wire and retaining catheter made possible the correction of this hitherto almost irremediable condition. In 1853, encouraged by the prospect of improvement in health and yearning for a larger field, he moved to New York, where for two years the coolness and aloofness of his professional colleagues caused him to feel the bitter sting of social and professional isolation. While his health improved, he had no patients, his friends dwindled and he had no means of bringing himself before the public or of reaching the profession. Saying to himself, "I am a lost man unless I can get somebody to create a place in which I can show the world what I am capable of doing," he conceived the idea of a woman's hospital. After much effort and many vicissitudes, he finally

succeeded in arousing the interest and eliciting the help of the profession at large and some of the influential, public spirited women of the city with the result that the Woman's Hospital, with thirty beds, all free, was opened in May, 1855. He was particularly fortunate in the selection of Dr. Thomas Addis Emmet as assistant surgeon to the hospital, who proved a valuable coworker and a most able successor.

With the opening of the Woman's Hospital, Sims' position as a leader in world gynecology was definitely established. From the temporary structure at 83 Madison Avenue the hospital was removed to the block of ground donated to it by the city on Fiftieth Street and Lexington Avenue, whence after nearly half a century it was removed to the present magnificent structure at 141 West Forty-Ninth Street, an institution which has been far-reaching in its beneficent influence in the restoration of woman to health and stands as a monument to the inspiration and genius of Sims. One of the saddest experiences of Sims' life was his voluntary but eventually forced resignation as Surgeon to the Woman's Hospital in 1874. A ruling of the Board of Governors debarred all cancer cases from hospital care and limited the number of spectators at any one operation to fifteen. Indignant at the failure of his colleagues on the surgical staff to support him in his objections, he arose in the midst of an annual meeting of the officers and friends of the institution and eloquently championed the cause of those afflicted with cancer, at the same time protesting vigorously against the limitation of visitors in that it detracted from the hospital as a teaching institution and invaded the almost sacred rights of the physician in the sick room. The Board of Governors stood firmly by its resolution, fixing fifteen as the limit of woman's modesty, and Sims was forced to resign from the institution which he had founded under great difficulties.

In July of 1861, Sims visited Europe for the first time, going to Dublin, thence to Edinburgh and London, being given a most enthusiastic and cordial welcome, quite in contrast to that he had received from his own countrymen in New York. The leading surgeons did him honor and requested him to demonstrate his operation for vesico-vaginal fistula to them: to this he always assented when patients were available. In compliance with a request he operated upon a difficult case at the Samaritan Hospital in London and while at the time its performance to him was satisfactory, the patient died, the first mortality in a series which embraced hundreds. Postmortem examination revealed the fact that both ureters had been closed by the sutures. From London, Sims went to Paris in September and there, as in the British Isles, met with a warm reception and received requests to operate in many hospitals.

The second case which he operated upon at the solicitation of Dr. Vernier, of the St. Louis Hospital, presented a fistula of enormous dimensions, the fundus of the bladder being prolapsed through the fistula to the extent that it protruded externally from the body. The case had been considered absolutely incurable. "When this case was cured at the end of a week, it created a regular furore in the Paris Hospital circles," and was followed by many requests for demonstrations of his method and technic. Velpeau was incredulous about the success of the operation, but was convinced when at the La Charité Sims repaired a fistula which had been subjected to seventeen different operations.

It was quite natural that under such circumstances the most difficult and forlorn cases should be brought to him for demonstration. One such in which "the base of the bladder was destroyed, the fundus being inverted and hanging outside the body in a hernial mass the size of a child's fist," he successfully operated upon at the Hotel Voltaire in the presence of many of the leading surgeons of the city, among them Nelaton, Velpeau, Civiale, Baron Larrey, Ricord, Fallin, Debout, Johnstone, Denonvilliers, Sir Joseph Olliffe, Campbell and Hugier. Accepting an invitation from Dr. Derobaix, surgeon to King Leopold of Belgium, he operated upon three cases of vesico-vaginal fistula in Brussels. One of these patients died, the second mortality in a long series. Autopsy showed that the nurse, in using the catheter, had driven it through the posterior wall of the bladder. While in Belgium, he was elected Fellow of the Royal Academy of Medicine and recommended to the Government for the Legion of Honor. He returned to Paris for further demonstrations and later sailed for home in December, 1861. During his visit abroad his activities gave a remarkable exposition of the altruism which forms one of the most cherished traditions of our profession, revealing his unquenchable desire to help humanity and to teach others, so that those taught might carry on.

"There is no brighter page in the annals of American surgery than that which relates to his enlightening surgical conquest of France, Belgium and England. He succeeded in curing many gynecological cases which had previously defied the efforts of Europe's greatest surgeons, whose confidence, admiration and esteem he thereby acquired."

At the time Sims left for Europe in July war clouds heralding civil strife were gathering on the horizon: these burst in all their fury after his departure and upon making preparations for his return he found it necessary to secure a passport to enter his own country. His dilemma is made quite clear by the following extract from a letter written his wife from Paris under date of November 1, 1861:

"The unfortunate state of political affairs at home places us in a very precarious position. I feel that we are not worth one dollar today. Let us do as we always have done, accept our position as we find it, and look continually to Him who ever rules all things for the best. Financially, the war ruins us. I have nothing but wife, children, health, reputation and plenty of labor. Our property in New York is valueless to us and will soon be worth nothing. Our property at the South yields nothing and may all be lost under the sequestration act. If we remain in New York, the probabilities are that it will go into the Confederate treasury. If we take the oath of allegiance to the Northern states, it is absolutely certain to be confiscated, and I will be worse off pecuniarily but better off professionally. I am just as well satisfied, just as cheerful and happy, as I can be under the circumstances. I wish you to go and see Mr. Simeon Draper and tell him that I came over here to remain six weeks: that the Government since then requires every American citizen to get a passport and take the oath. Tell him that my father and all my family are rebels, that they are fighting for the Confederate Government, and that I sympathize with them; that if I did not I would be, as a man, totally unworthy of the confidence that he and all the good people of New York have placed in me for the last eight years. That, however much of the rebel I may be at heart, he knows very well that I am incapable of doing a traitorous act against the flag under which we live in the North. My sentiments I cannot help, for I lived forty years of my life in the South. The companions of my youth are the leaders of the great Southern rebellion. My father, now seventy-three years of age, is one of its soldiers: our whole family are in arms: your father and mother, my mother and one of our beloved children have graves on Southern soil, and how under heaven could we be otherwise than as we are, unless lost to all sense of humanity? Give this letter to Mr. Draper to read, and after that, if he gives you his assurance that I shall not be subjected to any indignity or annoyance on my return home, let me know."

Sims landed in New York in January, 1862, and was made so unhappy by the state of affairs then existing that he made up his mind to take his family abroad, which he did in the following July, and remained until the end of the Civil War. So great was the reputation he achieved on his former visit that he had no difficulty in acquiring a lucrative practice. His patients were drawn from all classes of society, including members of nobility and even royalty, from the European capitals. While in Baden-Baden in 1863 he wrote his most important professional work, "Clinical Notes on Uterine Surgery with Special Reference to the Management of the Sterile Condition." Judged by the then existing standards, it represented a distinct advance in knowledge based upon a large experience, in which fertile ingenuity, keen powers of observation and an amazing ability to evaluate symptoms correctly were everywhere apparent. In the estimation of the author, to whom a certain amount of paternal pride must be granted,

"It was so radical and revolutionary in all the methods adopted, and so startling in the results claimed in the treatment of many affections, that the profession did not at first readily accept its teachings, but in a few years it completely revolutionized the subject of gynecology. Before that time there was not a professorship of gynecology, worthy of the name, connected with any of our medical schools, and now we have professorships of this department in every medical school in the country, and, indeed, throughout the civilized world."

Returning home at the end of the Civil War, he resumed practice in New York, which he continued until the outbreak of the Franco-Prussian War in 1870, when he returned to France and there organized and became surgeon-in-chief of the Anglo-American Ambulance Corps. He rendered such distinguished professional services, especially at and after the battle of Sedan, that the French Republic conferred upon him the Order of Commander of the Legion of Honor. Later, in 1881, he presented a paper before the New York Academy of Medicine based upon his experience and observation during this service that ranks as a pathfinder in the domain of abdominal surgery. Under the title "The Careful, Aseptic Invasion of the Peritoneal Cavity for the Arrest of Hemorrhage, the Suture of Intestinal Wounds and the Cleansing of the Peritoneal Cavity, and for All Intraperitoneal Conditions," he promulgated the following four rules, which in the light of modern knowledge still hold good:

(1) The wound of entrance should be enlarged sufficiently to ascertain the whole extent of the injuries inflicted.

(2) These should be remedied by suturing the wounded intestine and ligating bleeding vessels.

(3) Diligent search should be made for extravasated matter and the peritoneal cavity should be cleansed of all foreign matter before closing the external wound.

(4) The surgeon must judge whether the case requires drainage or not.

Following the cessation of hostilities in the Franco-Prussian War he lived alternately in Europe and America, busily engaged in the practice of his profession wherever he found himself. While in Paris in April, 1878, he operated upon a woman with a tumor in the right hypochondrium, his diagnosis being a cyst connected with the liver or "dropsy of the gallbladder." He did

a cholecystotomy, removing sixty stones, and gave to the operation the name by which it has since been known, believing it to be the first on record. His operation, however, was antedated by that of Dr. John S. Bobbs, of Indiana, on June 15, 1867, to whom Sims graciously accorded priority. In 1876, he was elected President of the American Medical Association; in 1880 he was honored with the Presidency of the American Gynecological Society; in 1883 the gentle shroud of a merciful death stilled the tireless activity of a fertile brain, while his name and fame took on the mantle of immortality.

While the writings heretofore mentioned may be considered his most important ones, the remainder, 78 in all, covered a wide range of subjects, furnishing ample proof of his versatility in fields other than that pertaining to gynecology.

In contemplating Sims' career we cannot but find inestimable inspiration in his tireless energy and patient persistence; in his originality and courage in the quest of knowledge; in his tenacious adherence to ideals; in his unquenchable thirst to learn and having learned, his constant practice of transmitting his lore to others; in his unquestioned desire to help the afflicted and in the glorious service he rendered humanity. Of the value of the latter let the testimony of some of his contemporaries bear witness, as follows: Dr. Thomas Addis Emmet, his co-worker in the Woman's Hospital, wrote of his "Clinical Notes on Uterine Surgery:"

"Its publication was the turning point of modern gynecology, or more strictly speaking, American gynecology, of which he may be justly termed the father."

Of the Sims speculum he wrote:

"From the beginning of time to the present, I believe that the human race has not been benefited to the same extent and in a like period by the introduction of any other surgical instrument. Those who did not fully appreciate the value of the speculum itself have been benefited indirectly to an extent they little realize, for the instrument in the hands of others has probably advanced the knowledge of the diseases of women to an extent which could not have been done for a hundred years or more without it."

Professor T. Gaillard Thomas, in an address to the graduating class of Cornell University, said:

"If I were called upon to name the three men who in the history of all times had done most for their fellow men, I would say George Washington, William Jenner and Marion Sims."

The eloquent Dr. W. D. Haggard, Sr., said of him:

"I know that you will sustain me when I claim that gynecic surgery, with all its brilliant achievements, owes its present exalted position to the illustrious Sims no less than abdominal surgery owes its origin to the world renowned McDowell. They conferred on America the honor of being the birthplace of gynecology and did more to relieve the sufferings, restore the health and prolong the lives of women than any other two men, living or dead. To those who knew Sims personally, he gave inspiration while he lived and now that he is dead he has become a tradition, and his teachings, his example and his labors have passed into history and coup'ed his name with an art which will illumine the ages to come. As one star outshines another it was given to J. Marion Sims to transcend all his compeers in the glory of his achievements."

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THE RATIONALE OF SURGERY OF THE SYMPATHETIC SYSTEM*

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It is perhaps the function of the Chairman of this Section to address himself to the general aspects of surgery, to seek to delimit its boundaries, to define its relationship to other branches of medicine or to the larger world in which it must retain and magnify its prestige. The front on which surgery at present is most effectively extending its domain is in the physiologic field of the vegetative nervous system. Knowledge thereof is still uncertain, conceptions are unclassified, practice is without clear-cut standards. It is the front that now needs definition.

With this thought as a background, I shall venture hesitantly, perhaps in an entirely mistaken direction, into a terrain yet imperfectly charted. I want, if possible, to survey certain features of that landscape and plot their position and magnitude upon the outlines that are already known. It is a major task, and one that has proven the downfall of men far better

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qualified than I can pretend to be. I must, then, apologize at the outset for a hesitant approach that may, for all that, be far too bold.

Of the many problems presented by the sympathetic, the one I wish first to discuss is the pathological manifestation of sympathetic activity. Surgeons throughout the world are today destroying the function of various parts of the sympathetic system on the ground that certain symptoms and signs are manifestations of disordered function, to be corrected only by total abolition of function. The results frequently enough justify the preoperative assumptions; frequently they do not. In certain specific instances the logic of surgical procedures cannot be escaped. In others, little logic can be seen to exist. The particular need, therefore, is to define as clearly as we can what constitutes pathologic expression of sympathetic activity, particularly as such a definition will affect surgical indications.

Cannon again and again, notably in that charming and stimulating book, "The Wisdom of the Body," has emphasized the function of the vegetative nervous system as the regulator of the internal environment, that is, of the physicochemical conditions under which each individual cell can continue its independent (and yet interdependent) life and functions. He has shown that the sympathetic system corrects unfavorable states built up within the internal environment by physiological emergency, and saves the organism.

To judge by the surgical literature, the abolition of this protective mechanism by sympathectomy of a region rarely colors the surgeon's thought. If he corrects the local situation by operation he gives little consideration to the degree to which the patient may thereafter be hampered in his biological struggle against extremes of heat and cold, great muscular activity, fatigue, infections and metabolic disturbances such as dehydration, fasting and the like. These are aspects of sympathetic surgery that must be considered and as far as possible weighed and measured. What do we know of the activity of the inflammatory process in defense against infection when an extremity has been devoid of vasomotor control for years; or of the incidence of cerebral hemorrhage or aneurysm after cervical sympathectomy?

In the response of the sympathetic system to changes in internal environment, quantitative alterations in the functions controlled by sympathetic activity occur. The blood flows more swiftly and its distribution is changed, secretions are more profuse or altered in the relative proportions of their constituents, smooth muscle contracts more vigorously. We must remember, too, that alterations in the external environment are the initiating factors in most alterations in internal environment. It, therefore, follows that practically every slightest activity of the organism is accompanied by sympathetic impulse.

The physiological mechanisms thus actuated go on normally in the level just below or just above conscious sensation. We are only just aware of them at times; totally unaware at others. If now the environment becomes sufficiently abnormal, these mechanisms may speed up to the point at which conscious perception is forced on the individual. In a nutshell, symptoms are produced. Recognizing, then, that first, all changes in external environment are accompanied by changes in internal environment, and secondly, that the latter are accompanied and modified in all cases by sympathetic activity, one would *a priori* expect that pathological variations in environment would be accompanied in all instances by symptoms of sympathetic origin. Curiously enough, this generalization, although as true as most biological generalizations, has not received the emphasis it deserves. If one examines the list of common symptoms presented by patients, one is struck by the fact that an enormous proportion of them are entirely expressions of overactivity of the sympathetic, and that many of the rest are accompanied by such expressions. Hunger, thirst, vomiting, diarrhea, palpitation of the heart, night sweats, loss of appetite, dyspnea, redness, heat and so forth, are almost pure expressions in one way or another of these sympathetic activities in defense of the organism. Lumps are commonly not, nor is bleeding, although of course the latter is always accompanied by sympathetic response in the open blood vessel. Pain stands midway. Certainly the somatic pathways for cutaneous pain have been thoroughly established. Visceral pain, from headache to the pain of the distended bladder, is less clearly understood. Most anatomists and physiologists believe that no afferent fibers can be included in the sympathetic system, and hence that no pain sensations can be mediated thereby. On the other hand, Moore and Singleton and others have recently presented striking evidence suggesting that visceral pain may travel by sympathetic pathways. Certain surgical experiences also recently reported present similar evidence. Even skin sensation has been suspected of the same course. In Frazier's clinic, Helson has

observed forms of sensation remaining after fifth cranial nerve root division which are not present when the sympathetic supply has also been abolished.

We see that symptom production is predominantly a phenomenon of sympathetic activity. What, then, do we mean by speaking and writing as surgeons of sympathetic syndromes? Most syndromes are predominantly sympathetic. Where is the line to be drawn between these amenable to attack on the sympathetic system itself and those not so amenable? In viewing most of the symptoms mentioned we scarcely think of the sympathetic activity, but rather of the underlying cause. If cramps and vomiting occur, our minds are not on the profound sympathetic dysfunction that is present, but rather on its cause, the obstructed loop of bowel. No doubt we could cure night sweats by a total sympathetic denervation of the skin, were that procedure technically possible, but the tubercle bacillus would continue to be active. Such a *reductio ad absurdum* may help to emphasize the point I am here making, namely, that as surgeons, recognizing the permanent and irreversible nature of most operations on the sympathetic nervous system, we must define as clearly as we can the line to be drawn between those conditions suitable for sympathectomy, in that no underlying pathological change in external or internal environment can be demonstrated, and those, such as the instances just cited, unsuitable for sympathectomy because of the fact that a cause can be found. A third group of conditions standing midway between the other two should be mentioned, namely, those in which an underlying cause beyond present therapeutic help is demonstrated. The sympathetic overactivity of thrombo-angiitis obliterans often needs surgical correction; whereas were thrombo-angiitis obliterans better understood so that it could be treated directly, such symptomatic treatment would be as illogical as the surgical abolition of night sweats in the course of tuberculosis.

It is obvious at once that this grouping must be entirely tentative and temporary. As knowledge of disease gains ground, there will be a shift from the field of sympathetic surgery into that of other therapeutic methods. Such a shift has in fact already occurred. There is no disease in which the expressions of sympathetic overactivity are more obvious than in exophthalmic goiter. In the 1880's, Graves' disease was included in text-books of neurology. One of the earliest surgical attacks on the sympathetic system was Jaboulay's excision of the cervical chain for this disease. Today no one undertakes this procedure. Although our ignorance of the toxic thyroid is still profound, we doubt that the cause of the disease lies in the sympathetic, and we know more direct methods of improving symptoms.

It is probably wholesome for us, accepting the fact that most symptoms are sympathetic in origin, to look on all sympathetic surgery as symptomatic. In thrombo-angiitis obliterans it is frankly so. In angina pectoris, in Raynaud's disease, in scleroderma, we must be alert to avoid the temptation to think that we have attacked the cause of the disease. We must not speak of cures except as we imply only the relief of one or more symptoms. Improvement in circulation of the hands and feet in Raynaud's disease will not affect the psychoneurotic personality which is all too often a part of the syndrome. If we do not preserve this point of view, embarrassment may come to us later when the symptomatic character of the sympathetic disturbance may become as clear to us as the symptomatic nature of vomiting is clear to us now.

Of course, all this is simply a restatement of familiar concepts and relationships, serving perhaps to clarify the principles underlying practical action. To this restatement I want to add an attempt from another angle to resolve the confusion that hangs over the surgery of the sympathetic system. Not only must we have a clear understanding of the physiological principles involved in sympathetic symptomatic expressions, but also we must be able to see some orderliness in the grouping of these expressions. Without both of these, our clinical behavior towards the sympathetic system must be haphazard, with little logic. Perhaps even it may be threatened with empiricism. I shall then in the second place attempt a classification of those conditions commonly grouped by surgeons under the term "sympathetic syndromes" (*Table 1, see footnote*).

The final aim of such a classification is that of any classification: to arrange a group of conceptions in some logical form so that they can be grasped by a single mental act rather than by multiple mental acts.

The primary difficulty is that of inclusion and exclusion, the limitation of material for classification at some logical point. In the first place, I have excluded most single symptoms, no matter how strikingly sympathetic in nature any one may be. I have excluded all combinations of sympathetic symptoms in which established

knowledge of etiology permits rational curative treatment, such, for instance, as the vomiting, pain and diarrhea of food poisoning and the dilated pupil, moist skin, rapid heart and flush of tuberculosis. I have included syndromes with marked sympathetic stigmata of which the cause is not known. Lastly, I have included conditions of possible sympathetic nature which surgeons have considered material for sympathetic nerve interruption. Although the outline to be presented has been subjected to much criticism and has gained from many suggestions, I doubt not that omissions will be found and that inclusions will be protested. All conditions listed are included purely as symptom-complexes. No assumption is made that any one of them is a disease of the sympathetic system.

Table 1

ABNORMAL EXPRESSIONS OF SYMPATHETIC ACTIVITY*

(I) General
  (A) Overactivity
  (B) Underactivity

(II) Local
  (A) Overactivity, irritative
    (1) Sensory
      (a) Causalgia
      (b) Acroparesthesia
      (c) Angina pectoris
      (d) Sluder's neuralgia
    (2) Motor
      (a) Vascular
        (1) Raynaud's disease
        (2) (Erythromelalgia)
        (3) Vasospasm associated with
          a. Arterial disease
          b. Trauma
          c. Atrophic arthritis
      (b) Visceral
        (1) Paralytic ileus
        (2) Megacolon
        (3) Paralytic bladder
      (c) Somatic
        (1) "Reflex contractures"
    (3) Secretory
      (a) Hyperhidrosis
    (4) "Trophic"
      (a) Scleroderma
  (B) Underactivity, paralytic: from (1) surgery; (2) accidental trauma; (3) disease.
    (1) Cervical
      (a) *Horner's syndrome*
      (b) Heart, great vessels
      (c) Bronchi
      (d) Thyroid
    (2) Upper thoracic
      (a) *Vasomotor and secretory paralysis*, upper extremities
      (b) Heart and great vessels
      (c) Bronchi

    (Cervicothoracic)

    (3) Lumbar
      (a) *Vasomotor and secretory paralysis*, lower extremities
      (b) Intestine
      (c) Urinary bladder
    (4) Splanchnic
      (a) Stomach
      (b) Intestine
      (c) Kidneys
      (d) Adrenal glands
    (5) Hypogastric
      (a) Intestine
      (b) Urinary bladder
    (6) Peripheral (not permanent)
      (a) Periarterial: *Vasomotor and secretory paralysis* of extremity treated (uncertain)
      (b) By division of somatic nerves: *Vasomotor and secretory paralysis* of area denervated

*The difficulties of classifying sympathetic disturbances make such a classification as the above subject to misinterpretation unless fully qualified. It is therefore recommended that the table be referred to only in conjunction with the accompanying text.

The skeleton of such a classification to be complete should be articulated just as is built up the classification of diseases of the somatic nervous mechanism, that is, into syndromes of general or local character, of overfunction or underfunction. In spite of Crile's and Oppel's suprarenalectomies and suprarenal denervations, the general syndromes do not yet in any widely accepted therapeutic sense involve the surgical field. Furthermore, being neither internist nor neurologist nor psychiatrist, I recognize my inability to discuss them. The thorny path of the sympathicotonia and vagotonia of Eppinger and Hess presents to the most imaginative surgeon an automatic traffic light permanently set at its reddest. Let us, then, confine the classification to more or less localized syndromes presenting evidence of sympathetic dysfunction.

In including syndromes of overfunction and of underfunction, we need not here raise the somewhat moot question of interrelationship between the sympathetic system, strictly defined, that is, the thoraco-lumbar division, and the parasympathetic or craniosacral system. It does not now greatly concern us in a practical sense whether underfunction of the sympathetic implies overfunction of the parasympathetic, or *vice versa*. The latter system has yet been attacked surgically only in isolated instances. As surgeons, our activities are limited (with the possible exception of division of the vagus nerve) to the diminishing of function in the thoraco-lumbar division of the vegetative system. Although imbalance may be thought to exist, only one arm of the balance is available to us, and only one procedure is yet possible, namely, the removal of a weight from that arm.

Even after the limitation of material is somehow accomplished, the remaining task of classification is not easy. Syndromes merge into each other; one condition has perhaps received more than one name. However, by adhering to the principle that the portion of the syndrome most striking and most characteristic shall determine its position in the classification some order can be obtained from chaos.

Let us now examine our material in detail. The group of local hyperfunction, the irritative

syndromes, has first been subdivided under sensory, motor, secretory and (apologetically) trophic heads. The paralytic group, because it largely represents the end-results of surgery and surgery is perforce anatomical, has been subdivided on an anatomical basis.

Of the sensory syndromes, causalgia and acroparesthesia belong under the head of the vasomotor neuroses of the earlier observers, a term which perhaps implies too positively that their etiology is resident in the vasomotor nervous tissue itself. Both, although associated at times with vasomotor phenomena, are predominantly sensory in character. Each has yielded to sympathectomy. Both, therefore, fulfill our criteria for listing. The inclusion, however, of angina pectoris and of Sluder's neuralgia or lower-half headache introduces controversial matter. Time will not serve to define the present state of thought about the former. Suffice it to say that the pain of angina pectoris is in many instances relieved by various procedures that break the course of sympathetic impulses to and fro between the central nervous system and the cardiac plexuses, whether or not the disease is primarily a vasospastic state. If it be a vasospastic state, then we are directly relieving a sympathetic syndrome of unknown cause. If it be not, then we are deliberately interrupting pain pathways to relieve intolerable suffering of obscure origin. Lower-half headache must be included in our classification only because temporary interruption of impulses through a sympathetic ganglion, the spheno-palatine, will often relieve the pain that is the only symptom of the disease.

When we examine the inclusions under the head of motor syndromes we observe familiar concepts. Three types of muscle may be affected: the vascular musculature, that of the hollow viscera, and in rare instances and through an obscure mechanism, the skeletal muscles. Two conditions placed here have no association with known lesions, namely, Raynaud's disease and erythromelalgia. The former needs no word of comment. In regard to the latter, one may question whether it belongs here rather than under the group of sensory syndromes, because of the pain that is a large part of the picture. However, objectively the striking element is the evidence of circulatory change, and therefore it is included with the motor group. Again there is doubt as to its being an irritative sympathetic lesion in any sense. At least in its earlier phases circulation is increased. Evidence of sympathetic overactivity is nevertheless seen in the presence of hyperhidrosis, and the syndrome has disappeared after division of the lumbar posterior spinal roots with their accompanying sympathetic fibers. On account of legitimate doubt, however, it has been bracketed. The third group includes those vasospastic states that are associated with known conditions of non-sympathetic nature. In thrombo-angiitis obliterans, the vascular sympathetic plexus is presumably stimulated by the inflammation in the vessel wall and much the same mechanism can often be postulated when vasospasm follows trauma. The question has been raised by students of atrophic arthritis whether the joint manifestations may not in certain cases be the result of an impairment of the circulation on a vasomotor basis, which is also expressed in the extremity by coldness and blueness of the skin.

Of the visceral motor syndromes we are learning much. Certainly megacolon and the paralyzed bladder belong in our list, because of the brilliant results of sympathectomy, properly planned, in these conditions. For the one we know no cause; for the other we may in most instances know a cause beyond other therapeutic help. Perhaps we can no more logically include paralytic ileus as a sympathetic syndrome than we can so consider diarrhea. In most instances a known and theoretically a remediable etiology is present. Paralytic ileus is a symptom of trauma and peritonitis and toxemia and mechanical obstruction. Relieve or prevent these, and paralytic ileus ceases. However, it has been successfully treated by temporary splanchnic nerve isolation through spinal anesthesia, in the course of treatment of the underlying cause. Hence it must be included under our premises.

Of the somatic muscle syndrome I can have little to say. Wier Mitchell described these curious contractures in conditions that were obviously syndromes of predominantly sympathetic nature. Leriche has observed them, ascribing their first mention to Babinski and Froment. I have seen at least two instances, which are being reported elsewhere. In each case striking contracture of muscles of the forearm promptly disappeared following the employment of measures that successfully relieved obvious vasospasm. We must, I think, recognize that they exist, reserving any attempt to define their mechanism. We can, of course, point to the fact that the spastic muscles are probably deficient in volume flow of blood as the result of vasospasm, and that they receive an adequate blood flow when vasospasm ceases.

Of secretory syndromes there is also little to be said. The heading must be left in our classification, however, to receive conditions that later may be placed there. Hyperhidrosis is an accompaniment, of course, of all local sympathetic overactivity. Whether it deserves a name by itself as a syndrome is doubtful, although, of course, the dermatologists meet it in that guise. The control of other glands is shared between sympathetic and parasympathetic nerves. Lacrimation is a function, for instance, of the latter, as is hydrochloric acid secretion. Mucous colitis is usually associated with parasympathetic overactivity, evidenced by spasm of the bowel wall. When the surgery of the parasympathetic is written, the secretory phase will bulk large.

The "trophic" group, included as I have already admitted, somewhat apologetically, is also the possible future recipient of syndromes. Scleroderma, known for its frequent association with vasospasm, bears somewhat the trophic stamp and has been relieved by the abolition of sympathetic nerve impulse.

So much for the irritative expressions of sympathetic activity, the conditions for which surgical therapy has been advanced. Let us turn now to the paralytic syndromes, in the main the result of such surgical therapy.

In a negative sense at least, this is the more important field for us to study. In part we know what we are doing when we remove the sympathetic supply to a region; in larger part we do not. For that reason, no detailed attempt can be made throughout our classification to indicate the elements of the various syndromes. Such a condition as Horner's syndrome is easily recognized, although there is no clear-cut conception of the anatomical factors modifying the degree in which its various elements are developed. We know the abolition of the vasomotor gradient and the destruction of sweat gland activity that follows sympathectomy of the extremity. Cannon and other physiologists have done much to throw light on general and visceral effects of sympathectomy. By and large, however, there are great gaps in our knowledge. A striking deficiency at present is illustrated by the failure of surgeons and anatomists, working separately and together, to find an anatomical unit or group of units of the sympathetic system, the removal of which will uniformly and permanently remove vasomotor control from the upper extremities with the accuracy with which lumbar sympathectomy removes it from the lower. A cervico-thoracic sympathetic ganglionectomy has unpredictable results in the individual case. If this is true for the sympathetic supply of the arms, how much more true it is for the supply of the viscera of the head and chest. Clinical observations seem to suggest no permanent compromise of the functioning of the abdominal viscera following lumbar sympathetic ganglionectomy. And yet, if the same procedure will correct the abnormal muscular state in certain instances of megacolon, it is reasonable to assume that bowel activity must be affected, even if the effect is below the level of clinical expression. Again, to repeat what I have earlier remarked, our ignorance of the long-time results of sympathetic ganglionectomy approaches the absolute. The gist of it all is, then, that we as surgeons know not a great deal about the secondary effects of our therapeutic procedures. And the list of the paralytic syndromes is merely an almost empty filing cabinet in which to preserve future knowledge. The cabinet is not as empty as the outline suggests. The known material is so complex and often so controversial that any beginning at indicating it would abuse your patience.

I have, therefore, listed six portions of the sympathetic system that the surgeon commonly attacks, and under them the most important viscera the behavior of which following denervation it is his duty to understand. Where an instance of a true syndrome exists which can be easily recognized, it has been named and underlined. Horner's syndrome and vasomotor and secretory paralysis in the extremities comprise all of such syndromes. The subdivisions of our classification are somewhat arbitrary. The line drawn between, for instance, cervical paralysis and upper thoracic paralysis, cannot be sharply distinguished. This has been partly indicated by the bracketing of the two under the term for the common operative procedure. In the same sense the results of lumbar sympathectomy cannot be sharply divided from those of removal of the more distal ganglia. It is to be remembered that accidental trauma and disease, particularly neoplasms, also cause destruction of sympathetic pathways. These are important, but for us as surgeons, not nearly so important as the operative destruction for which we must assume complete responsibility. In the peripheral group we must note that the effects are not permanent, inasmuch as post-ganglionic fibers alone are interrupted.

By our classification of local conditions we have attempted to mark off the field in which surgery has been attempted, may perhaps profitably be attempted, or has already proven its

value. In conclusion, if we are to profit from the contemplation of the physiological basis for sympathetic symptoms and the survey of the syndromes built up upon this basis, we must formulate a certain habit of thought that must be applied to the individual clinical problem. In the first place, we must remember that the only syndrome positively known to be fundamentally sympathetic in origin, without underlying alteration in environment, that is, without other etiology, is surgical or accidental sympathetic paralysis. All other syndromes, including the great group of irritative phenomena listed and the paralyses associated with disease, may possess an underlying etiological basis quite independent of the sympathetic system. It is reasonable to suppose that they do possess such an etiology. The great majority of symptoms of sympathetic origin, as pointed out above, have obvious causes. The limitations imposed by our ignorance prevent us from seeing them, or, as in thrombo-angiitis obliterans, prevent us from attacking them directly.

In the second place, we must recognize our lack of knowledge of the effect of sympathetic denervation on the organism over a period of years. Cannon has shown how poorly the totally denervated animal meets marked change in environment. Surgery has not yet proposed anything approaching total denervation. Harmless as the sympathetic denervation of the legs seems to us, when viewed either from the point of view of the whole organism or from that of the single member, we are in no way justified in assuming that the apparent harmlessness is real. For example, the skin surface of the legs represents slightly less than 40 per cent of the total skin surface of the body. After bilateral lumbar sympathetic ganglionectomy there is believed to be no effective response of the blood vessels of the legs to demands by the body for the conservation of heat. We do not know how well the individual subjected to this operation will withstand exposure to extremes of cold; whether the loss of heat by radiation through the unwavering dilatation of 40 per cent of his superficial blood vessels will affect materially his ability to conserve body heat under unfavorable circumstances. The ignorance that we must admit of the late results of our sympathetic surgery is real, but on the basis of present experience that it is a danger to the patient is perhaps theoretical. It is only fair to state that no important deviations from normal reactions have been recorded in the partially sympathectomized human being. After all, Cannon's totally denervated cats lived and loved and propagated quite happily under normal conditions.

Perhaps from these considerations a few principles may be laid down to guide our surgical conduct:

(1) Sympathectomy, except peripherally, is a permanent irreversible procedure, affecting to an unknown degree the ability of the subject to meet physiological emergencies. It is, therefore, to be employed only with positive indications and with due consideration of every alternative procedure.

(2) Positive indications exist under the following circumstances:

(a) In the presence of a syndrome of which the elements are predominantly sympathetic in nature.

(b) In the presence of such a syndrome which no known toxic, infectious, metabolic, psychic or neoplastic cause can explain; or, in a few instances, when, such a cause being known but not therapeutically understood, the sympathetic symptoms are sufficiently troublesome to need relief for themselves.

(c) In the presence of such a syndrome, only when it is chronic, presenting an established chain of sympathetic phenomena, known not to be the result of some passing phase of physiological disturbance.

(3) An assumption that a so-called sympathetic syndrome is a disease *ab initio* of the sympathetic system is not justified.

(4) Sympathectomy, except perhaps peripherally, is rarely justified as a method of obtaining hyperemia where there is no element of vasospasm present, as in the treatment of delayed union of fractures.

I am deliberately not adding to our maxims one concerning preoperative tests of secretory, vasomotor or visceromotor response. We are not discussing practical matters, the choice of procedure, the technic of study, the surgical approach. We are concerned with a more fundamental question, the rationale of sympathetic surgery. Our approach to the case as a surgical problem must first be colored by the ideas expressed. Fortunately in many instances we can demonstrate the correctness of our approach by a preoperative test foretelling with striking accuracy the immediate effect of the contemplated operation.

The principles we have formulated must be applied, as I have said, to the individual clinical problem. I need not further weary you by applying them to the sympathetic syndromes

listed in our classification. Such an application will demonstrate that, except for conditions treated by temporary block of sympathetic impulse, such as paralytic ileus, most of the syndromes fulfill our criteria. It is well that this is so. It remains for us as practical surgeons to see that this healthy condition of thought persists.

The surgery of the sympathetic system offers great promise. It is our duty not to retard the fulfillment of that promise by bad judgment. A new field or a new idea in medicine is always met by one or the other form of bad judgment, either overconservatism or overenthusiasm, usually passing from the former phase into the latter. Sympathectomy may easily become the victim now of overenthusiasm. In future years we do not want to contemplate individuals, perhaps freed from their complaints, but suffering from the effects of their treatment, particularly if knowledge finally comes to us of the real causes of these obscure sympathetic phenomena. The present discussion is in substance a plea to keep our sympathetic surgery within the bounds of conservatism at a time when new indications for its use are darkening the sun.

HYPERINSULINISM AND EPILEPSY: PRESENTATION OF PATIENTS AND CASE REPORTS*

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First, I desire it distinctly understood that I do not believe that hyperinsulinism is the cause of epilepsy. Nor do I think it is the sole etiological factor in any case of epilepsy. I believe, however, that in a patient with the convulsive tendency, or predisposition, the hypoglycemia resulting from hyperinsulinism may be a precipitating factor in producing convulsive seizures.

There are many causes of epilepsy, the most important of which is an underlying neurogenic constitutional tendency to convulsions. Epilepsy is not a disease entity, but a symptom, or result, of many diseases. Bates Block,[1] in a comprehensive article on epilepsy in "Tice's Practice of Medicine," quotes Leftwich in listing eighty diseases in which convulsions occur. Therefore, the most important problem in the study of any case of epilepsy is to find the organic disease, or the functional disturbance, of which the recurring attacks of convulsions and unconsciousness (epileptiform seizures) may be manifestations.

In recent years, many cases of *grand mal* and *petit mal*, which were formerly diagnosed as epilepsy, have been recognized as symptomatic of organic diseases of the brain, such as trauma, neoplasms, encephalitis, meningitis, tuberculosis, syphilis, multiple sclerosis and other cerebral lesions. Lesions of the hypophysis producing hypopituitarism are not infrequently associated with epilepsy.

It is believed by some that epilepsy may be associated with lesions, or functional disturbances, of other organs besides the brain; so that the gastro-intestinal tract, the heart, and gonads have been suspected of playing a part in the etiology of *petit* and *grand mal* attacks. Epileptic seizures, likewise, have been considered as manifestations of toxins circulating in the blood, and psychic disturbances have been thought to be a factor in precipitating convulsive attacks.

With the application of the newer clinical and laboratory methods of diagnosis, more and more cases of epilepsy will be found in which *petit mal* and *grand mal* are merely symptoms of organic, or functional diseases of various organs. Therefore, it may be predicted that the number of cases of so-called idiopathic epilepsy will be greatly decreased in the future, and that many afflicted persons now called epileptic will be relieved of the stigma of that classification which usually is interpreted by laymen, and by many physicians, as meaning "Abandon hope all ye who enter here." Certainly no individual should be stigmatized by a diagnosis of epilepsy until every effort has been exhausted to find the disease of which the recurring attacks of convulsions may be symptoms. Perhaps, as Lennox and Cobb[2] suggest, it would be best for the medical profession to discontinue using the word epilepsy and speak of "paroxysmal disorders" or "the convulsive states," at least until the physician can "search out the various contributing or precipitating factors which, in the individual patient, may make for seizures."

In the light of recent investigations it seems probable that in some cases the periodic attacks of convulsions and unconsciousness in epileptic patients may be manifestations of the hypoglycemia resulting from the spontaneous excessive secretion of insulin by the islet cells of the pancreas (hyperinsulinism). A number of cases reported by careful and capable clinicians, in

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which the diagnosis of epilepsy had been made, have been associated with hypoglycemia assumed to be due to hyperinsulinism; and in some of these cases the convulsions were controlled by dieting. In other cases of periodic epileptiform convulsions associated with hypoglycemia, adenomas of the pancreas were found at operation and their surgical removal resulted in clinical cures of patients who otherwise would have been doomed to live only a few months, or a few years, with the constant fear of epileptiform seizures hanging over them.

In a recent study, a number of cases which had been diagnosed as epilepsy were found associated with marked degrees of hypoglycemia. This observation suggests that hyperinsulinism may be one of the precipitating factors in the etiology of a distinctive type of *grand mal* and *petit mal*. In other words, the hypoglycemia in such cases may be the trigger that sets off the epileptic explosion in a person who has the constitutional convulsive tendency. It might be better to discontinue the use of the word epilepsy altogether in cases due to insular hypoglycemia and classify them as due to hyperinsulinism, a disease of the pancreas.

If the hypoglycemia due to hyperinsulinism is proved to be a factor in the periodic attacks of convulsions in some of the cases now classified as idiopathic epilepsy, with the application of our present knowledge of the dietary management of hyperinsulinism, it seems probable that this type of epilepsy, unless associated with neoplasms of the pancreas, may be controlled by a diet that will maintain the patient's blood sugar level at a point high enough to prevent the seizures. The fact that a number of persons who had periodic attacks of convulsions, some of which were thought to have been epileptic seizures until hyperinsulinism was diagnosed, have been cured by the removal of adenomas involving the islet cells of the pancreas, should bring hope to the patient who has periodic attacks of convulsions associated with hypoglycemia of pancreatic origin which cannot be controlled by dieting.

HYPOGLYCEMIC CONVULSIONS CAUSED BY ADMINISTRATION OF INSULIN (INDUCED HYPERINSULINISM)

Attacks of convulsions and unconsciousness with spontaneous recovery, resembling epilepsy, have been reported as having been brought on both accidentally and experimentally by overdoses of insulin (induced hyperinsulinism). Accidents with insulin, however, are exceedingly rare when it is used by clinicians experienced in treating diabetes. Joslin[3] reports only two such cases in his large experience in the treatment of diabetes, and he must have had many insulin reactions with varying degrees of hypoglycemia.

Herold[4] reports the case of a diabetic ex-soldier, who before he came under Herold's care had attacks of convulsions every evening after a third daily dose of insulin. The attacks had been diagnosed as "epilepsy." The patient would sleep several hours after the attacks and recover spontaneously. His fasting blood sugar was 0.290 per cent. He was given the same amount of insulin and the same diet that he had been getting before he came under Herold's observation. His noon blood sugar, before lunch, was 0.130 per cent. At 4:00 p. m., four hours after his noon meal and his midday insulin, his blood sugar was reduced to 0.056 per cent. Two hours after his evening meal and insulin his blood sugar concentration dropped to 0.028 per cent, when he was given orange juice and later milk, and the usual evening "epilepsy" seizures were prevented. Herold adjusted the diet and the insulin dosage to meet the patient's needs and thus cured his "epilepsy."

Lennox and Cobb[2] report the case of an epileptic patient, "a severe diabetic whose first convulsion followed an overdose of insulin." On seven occasions the patient was given large doses of insulin with depression of blood sugar to below 50 milligrams, accompanied by hypoglycemic reaction. On two occasions, when the blood sugar was at its lowest point, the patient had a generalized convulsion, and on another occasion, when the blood sugar was only 25 milligrams, he was mentally confused but had no convulsion. On other occasions he had convulsions not related to insulin injections when the concentration of blood sugar was normal.

These cases prove that induced hyperinsulinism, resulting in hypoglycemia, may cause convulsions, followed by unconsciousness, with spontaneous recovery very similar to the epileptic attacks of *grand mal*. It surely seems reasonable to assume that the spontaneous excessive secretion of insulin by the islet cells or adenomas of the pancreas resulting in hypoglycemia may produce epileptic fits in individuals who have the constitutional convulsive tendency. The case of Lennox and Cobb[2] confirms the observation of John[5] that the blood sugar level in insulin reactions varies, not only in different patients, but in the same patient at different times.

The fact that epilepsy is rare among diabetic patients suggests that the hyperglycemia in them (hypo-insulinism) may be incompatible with attacks of *petit mal* and *grand mal*. Joslin[3] states that "no clear-cut case [of epilepsy] can be found among 6,000 glycosurias, of whom 5,086 are true diabetics." He mentions two cases in which there were epileptiform convulsions in which the diagnosis of epilepsy was doubtful. Apparently the hyperglycemia and acidosis of diabetes are associated very infrequently with convulsions. On the other hand, hypoglycemia

in fasting epileptic children was noted by Shaw and Moriarty[6] and others, though none of them suggested that the hypoglycemia was due to hyperinsulinism.

The Mechanism of Hypoglycemic Convulsions. Cannon,[7] of Harvard, has explained how and why convulsions occur in hypoglycemia. He regards the convulsions as a part of an automatic defense mechanism when hypoglycemia occurs to raise the blood sugar level to normal by releasing muscle glycogen after the sympathico-suprarenal system has exhausted the glycogen reserve in the liver. Cannon states that when the blood sugar level falls, as from the injection of insulin (induced hyperinsulinism), or from spontaneous hyperinsulinism, suprarenal secretion is increased, and an overdose of epinephrine is thrown into the circulation. Cannon thinks that it is temporary hypersuprarenalism that causes the pallor, nervousness, anxiety neuroses, weakness, accelerated pulse, the muscular trembling and sweating which are observed in the insulin reaction, or insulin shock, when the blood sugar ranges between 60 and 80 per cent. Certainly the symptoms which occur in patients from an overdose of epinephrine are identical with those seen in an insulin reaction.

In other words, in the eternal struggle that goes on in the body between the pancreas and the suprarenals, which maintains the normal blood sugar level at about 100 milligrams per cent, when the pancreas produces too much insulin, thus burning up glucose too rapidly, and blood sugar concentration falls, the sympathico-suprarenal system fires its machine guns and small artillery, thus throwing an excess of epinephrine into the blood. Then the epinephrine reaction—the so-called insulin shock—occurs, which lasts until the blood sugar level is raised to within the normal limits, that is, 80 to 120 milligrams per cent. When from excessive glycogenolysis the repositories of glycogen in the liver have been exhausted the hypoglycemia returns. If this "charge of the light brigade" of the epinephrine forces is not sufficient to raise and maintain the blood sugar to normal, and the blood sugar level falls to 50 milligrams per cent or lower, then a broadside from the 47 centimeter guns of the sympathico-suprarenal is fired into the blood stream, causing general convulsions, which mobilizes muscle glycogen by liberating dextrose from the muscles, thus raising blood sugar above the lethal level.

It is this automatic blood sugar regulating mechanism that causes patients to recover spontaneously from hypoglycemic unconsciousness and convulsions. It is exemplified by giving a patient who is in hypoglycemic coma a hypodermic of 1 c. c. of a 1 to 1000 solution of epinephrine, thus raising his blood sugar level. In a few minutes consciousness returns; and if glucose is given by mouth, thus maintaining a higher blood sugar level, the patient remains conscious. If not he soon lapses into unconsciousness, or if dextrose is given intravenously the blood sugar is raised and consciousness returns.

Fischler[8] and his associates designated as "glucoprival intoxication" the symptoms of excitement (anxiety neuroses), collapse, convulsions and coma that accompanied the hypoglycemia produced by giving laboratory animals phorhizin. It certainly seems that the deprivation of glucose in the tissues is associated with the symptoms observed in hypoglycemia, but Cannon's theory accounts for the intoxication by the increased activity of the sympathico-suprarenal system.

REPORTED CASES

A number of cases of recurring attacks of convulsions and unconsciousness of epileptiform character were reported by other clinicians before our first case of epilepsy in a patient who had hypoglycemia apparently due to hyperinsulinism was observed; and a number of other cases have been reported since then. Most of these cases were reviewed in an editorial in the SOUTHERN MEDICAL JOURNAL[9] and in a number of articles by me[10] and others. I regret that in this clinical day, given by Birmingham physicians, there is not time to discuss the important contributions in the literature on the association of recurring attacks of convulsions and unconsciousness of an epileptiform character by other clinicians. To those who are interested I would refer you to the articles by Wilder, Allen, Power and Robinson,[11] Howland, Campbell, *et al.*,[12] Neilson and Eggleston,[13] Carr *et al.*,[14] Clarence Weil,[15] Hartman,[16] Womack *et al.*,[17] Evarts Graham,[18] Derrick,[19] Krause,[20] Patterson[21] and McGavern,[22] and others.

TRUE EPILEPSY ASSOCIATED WITH HYPERINSULINISM

My first cases of hyperinsulinism associated with genuine epilepsy were observed because of routine fasting blood sugars which we have carried out on all cases who come to our Clinic for diagnosis and treatment.

Case 1.—Mrs. E. R. V., a housewife, aged 28, height 5 feet 4½ inches, weight 93 pounds.

She had had paroxysms of convulsions and uncon-

sciousness at varying intervals for 11 years. The first attack occurred about one month after an abdominal injury from which she was in bed for three weeks. The attacks occur now only during menstruation. She is weak and nervous for an hour before meals, but feels stronger after eating. When the blood sugar level reached 0.050 per cent she had a convulsion which lasted 3 minutes, followed by a brief period of unconsciousness. The blood sugar after the convulsion was 0.050 per cent. She was then given phenobarbital grains 1½ (0.10 grams). In half an hour the blood sugar level had risen to 0.063 per cent and in one and a half hours to 0.069 per cent.

Treatment consisted of a low carbohydrate high fat diet. She gained 14 pounds in weight and her general health was very much improved. She has had only two seizures in eight months, and those were traceable to fatigue and to neglect of diet during menstruation.

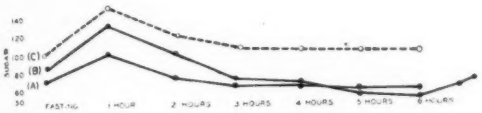

Chart 1, Case 1

Epilepsy following abdominal injury: (a) low flat blood sugar curve of hyperinsulinism; (b) blood sugar curve during menstruation when attacks occur. When blood sugar reached 0.050 per cent *grand mal* attack occurred. Note rise of blood sugar after taking 1½ grains luminal beginning at sixth hour; (c) average normal blood sugar curve.

EPILEPTIFORM ATTACKS

Case 2.—A white youth, aged 18, a high school student, examined April 18, 1932, had for the previous nine years had periodic attacks of what he called headaches, which he described as follows: "Everything blurs before my eyes, and I feel weak, drowsy and hungry." He did not become unconscious, but lay down and slept for from five to forty-five minutes. He awakened feeling well. He was usually hungry and often ate on awakening. His attacks occurred most frequently about 3:00 p. m., three hours after dinner. He had had them before supper. At first, the attacks were not severe and occurred at intervals of about every two weeks. The attacks gradually increased in frequency and severity until they occurred two or three times a day. May 30, 1931, his mother found him unconscious in bed about 7:00 a. m., before breakfast. He became conscious in about half an hour. He rested in bed until noon and felt better after eating dinner. He had no more attacks until March 3, 1932, about 9:30 p. m., about three and a half hours after supper. He was in bed asleep when his loud breathing attracted the attention of his mother. He "frothed at the mouth" and his muscles jerked all over. He became conscious in about half an hour and felt well the next morning. The third attack occurred April 10, about 10:30 p. m., four and a half hours after supper. There was stertorous breathing, the mouth frothed and the muscles jerked all over. He became conscious in half an hour.

The family history and previous illnesses have no bearing on epilepsy.

Physical examination was negative. His height was 5 feet 11 inches (180 cm.); his weight, 169 pounds (77 Kg.). He has a fine physique.

Laboratory examination of the urine was negative. The Wassermann reaction of the blood was negative. The blood sugar, three hours after a huge breakfast, consisting largely of carbohydrates, was 0.075 per cent. One hour later his blood sugar was 0.060 per cent. He was then given 100 grams of dextrose in water. The hourly blood sugar readings are given in *Chart 2.*

The patient was kept under observation in the hospital for two weeks. He was given no medicine of any kind, but was placed on a diet of 75 grams carbohydrate, 75 grams of proteins and 240 grams of fat a day, including cream and orange juice every two hours between meals. Since he had had one attack at 5:00 a. m., he was given food at 4:00 a. m. He was taught to weigh and measure food and to calculate his menus. The *petit mal* attacks have been reduced in frequency and severity—almost controlled—and he has had three convulsions since he has been on the diet. His fasting blood sugar reading one month after he had been on the diet was 0.080 per cent. Another dextrose tolerance test was made June 27.

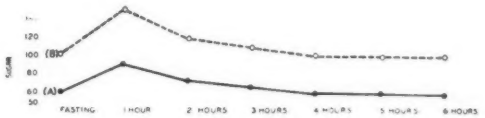

Chart 2, Case 2

Epilepsy and hyperinsulinism: A, typical hyperinsulinism blood sugar curve; B, normal blood sugar curve.

Case 3.—A. H. B., a college student, suffered from severe hyperinsulinism, with recurring attacks of unconsciousness. When seen April 25, 1933, his age was 22, height 5 feet 9½ inches, and weight 136 pounds.

Since November, 1931, he had had almost daily attacks of physical and mental exhaustion, when he became very nervous, "frightened and shaky," an hour or two before meals. He drank four cups of coffee and two glasses of coca-cola a day for relief of and to prevent attacks. He frequently became so weak that he had to lie down before his noon meal. He always felt well after eating. His symptoms grew worse until October, 1932, when he became dizzy and then unconscious for about 20 minutes. There were no convulsions. He had had five attacks of unconsciousness since. The anxious, nervous, weak feelings between meals have continued. When his blood sugar fell to 0.040 per cent his symptoms of the hunger attacks were reproduced. He became very weak and pale, particularly around the lips. He was very nervous and trembled, but obtained immediate relief by eating.

He was hospitalized for two weeks on a diet of 60 grams of carbohydrate, 60 protein and 150 fat, with food every one or two hours between meals and when awake at night. He has been free from symptoms except slight weakness one night about 11:00 o'clock, which was relieved immediately by taking orange juice. He has learned to weigh and measure food and calculate his menus to carry out the diet at home.

He returned for a check-up on May 29. He had had no symptoms except once when he could not get orange juice or other food between meals. He then became weak and trembled, but was relieved by eating. His fasting blood sugar was 0.066, compared with 0.050 per cent when treatment began.

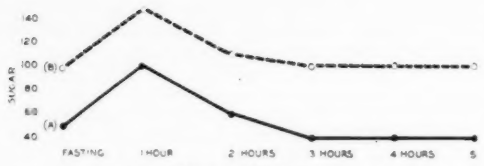

Chart 3, Case 3

Severe hyperinsulinism with recurring attacks of unconsciousness—"epileptic equivalent:" A, low flat hyperinsulinism blood sugar curve; B, normal blood sugar curve.

Case 4.—F. McC. had severe hyperinsulinism with recurring attacks of delirium and abdominal pain. He was seen August 9, 1932. He had been formerly a druggist, now a farmer. His age was 30, height 5 feet 9 inches, weight 167 pounds.

The symptoms were recurring attacks of intense headaches, agonizing abdominal pain, and unconsciousness, with violent delirium. He was hungry all the time and felt weak when his stomach was empty. He formerly drank 15 to 20 glasses of coca-cola a day for relief, but the attacks grew worse. The attacks occurred every few months and lasted two or three hours. His appendix was removed, but this did not stop the attacks. The attacks were most frequent when he was physically tired.

Treatment consisted of frequent daily rest periods, low carbohydrate, high fat diet with frequent feedings between meals, and no medicines. He has had no attacks since treatment began 9 months ago.

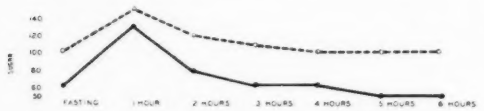

Chart 4, Case 4

Severe hyperinsulinism with recurring attacks of deliria and abdominal pain: A, hyperinsulinism curve after glucose tolerance test; B, average normal blood sugar curve.

NARCOLEPSY OR "SLEEP EPILEPSY"

The next case presented is not one of true epilepsy, but it seems to be one of narcolepsy, "sleep epilepsy," or "epileptic equivalent," associated with and apparently caused by hyperinsulinism. The patient's dramatic recovery and maintenance of health, with normal fasting blood sugars for a year after the operation, make it one of the most interesting cases of our series.

Case 5.—A white youth, aged 20, a miner by occupation, referred by Dr. D. H. Chilton, of Parrish, Alabama, complained of weakness, hunger ("could eat a full meal and be hungry in an hour"), pain in the abdomen, and "sleeping spells," in which he remained unconscious for several hours at a time.

The present illness began two years before, when without any cause that could be discovered, he "got sleepy and fell down" while working in a mine. He was unconscious for about three hours. Following this attack he had vague abdominal pains and was operated upon for appendicitis, from which he made an uneventful recovery. About two months later he "went to sleep" again while working in the mines and was unconscious for several hours. He then felt well for more than a year, except that he had "hungry weak spells." His meals did not satisfy him, but he had no more attacks of unconsciousness until March, 1932, when he "got sleepy" one afternoon while on a visit to a neighbor and remained unconscious for an hour. Following this attack, he had abdominal pains at irregular intervals, which were suspected of being symptoms of duodenal ulcer or gallbladder infection. The pains were irregular and not related to meals, though he usually felt better after eating. He was weak and unable to work. The "weak and hungry spells" continued. About three hours after breakfast he "got sleepy" and was unconscious for two hours. He felt better after eating honey with his supper and breakfast. He had abdominal pains and ate no dinner, but at 4:00 p. m. he took a cup of milk and cornflakes. He felt better for an hour, but then went into a profound coma. Physicians who saw him thought that death was impending. After he was aroused he was nervous and somnolent, but was restless through the night. The following morning, without food, he was brought 50 miles in an automobile to our Clinic. He was very weak and drowsy on arrival. His blood sugar was 0.050 per cent. He was given 3 ounces (90 c. c.) of orange juice and 5 ounces (150 c. c.) of 5 per cent dextrose solution, and in a few minutes the drowsiness left him and he felt very much better, though he continued to have abdominal pain.

The following morning a dextrose tolerance test was made, July 3. His fasting blood sugar was 0.060 per cent.

The patient was placed on a low carbohydrate, high fat diet, carbohydrates 100 grams, proteins 75 grams, and fats 210 grams, with orange juice or tomato juice, and cream every two hours between meals. The drowsiness left him, though he continued to have abdominal pain. He was so much improved at the end of two weeks that he returned home. He continued to improve for about ten days after returning home, though he complained that he became very weak in an hour or two after meals. He then became drowsy and had to take honey to keep awake. A month later he returned to the hospital. He was drowsy and his blood sugar was 0.066 per cent, though he had eaten a full breakfast two hours before. Suspecting a pancreatic lesion, probably an adenoma (insuloma), we decided on an exploratory laparotomy. The operation was performed by Dr. Adrian S. Taylor, assisted by Dr. H. L. Cheves and Dr. Thomas Wolford.

Operation and Results.—The exploration, under tribromethanol and ether anesthesia, revealed no pathologic changes of the duodenum, gallbladder, kidneys, suprarenal glands or other abdominal viscera, except adhesions of the posterior surface of the stomach to the peritoneum forming the posterior wall of the lesser sac. The pancreas was reddened, but otherwise normal in appearance. About half the pancreas (body and tail) was resected, and the cut edges were seared with a diathermy needle. The incision was closed, without drainage. The operative recovery was uneventful, except that about one week after operation his temperature rose to 101° F., when a small hematoma in the abdominal wound was opened and drained. He left the hospital in three weeks. Blood sugar readings

after the operation have been about normal, as shown in chart.

Since operation, the patient has had no tendency to somnolence or to the sleeping spells, though he has had three meals a day and nothing between meals. His fasting blood sugar one year after the operation was 0.100 per cent.

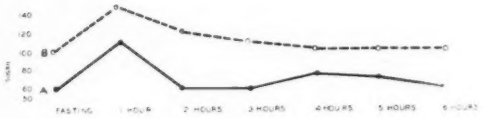

Chart 5, Case 5

Narcolepsy and hyperinsulinism: (A) slightly irregular hyperinsulinism blood sugar curve; (B) normal blood sugar curve.

Chart 6, Case 5

Daily fasting blood sugar readings after operation. Note the irregular level for the first week after operation, followed by nearly constant normal fasting blood sugar levels at varying intervals for nearly two months.

Comment.—Sufficient time has not elapsed since the operation to determine whether or not this patient has been permanently cured of hyperinsulinism. The fact that his blood sugar has been normal and the hypoglycemic symptoms have not recurred in a year after operation give reason to hope for a permanent cure of the hyperinsulinism in this case.

EPILEPSY ASSOCIATED WITH HYPOPITUITARISM AND HYPERINSULINISM

Cushing[23] first called attention to hypoglycemia associated with hypopituitarism, and in 1912 he suggested that "the degree of hypopituitarism may be determined by an estimation of the sugar content of the blood rather than by the more tedious production of alimentary glycosuria through feeding tests." He also called attention to the hunger for starches and sweets, "the sweet tooth," in obese epileptics who had hypopituitarism. Cushing, in his book on the pituitary gland, published in 1912, refers to 13 patients with existent hypopituitarism who showed epileptiform tendencies. He regarded the relationship between epilepsy and hypopituitarism as too close not to be considered, particularly since he was able to prevent the convulsions in some of them by the administration of pituitary gland substance. Cushing also stated that epilepsy had not been observed in acromegaly, a condition which he regarded as being due to hyperpituitarism.

In Cushing's recent Harvey Society lecture he gives Burns[24] (1923) credit for discovering the antagonistic effect of insulin and posterior hypophyseal extracts and for pointing out the therapeutic value of pituitary extracts in hypoglycemia. Cushing credits Cawley[25] with "having demonstrated the presence in the blood of hypophysectomized dogs of a substance having marked hypoglycemic action." He adds:

"All things considered, therefore, evidence abounds that the high tolerance for carbohydrates in hypopituitary states is due to an increase of the insulin content of the blood due to the withdrawal of the counteractive posterior lobe principle."

In a recent personal letter, Cushing says:

"Unquestionably all the old states that we originally described as hypophysiopriva in dogs after hypophysectomy were due to hyperinsulinism though we had no means of determining this in years gone by."

From these observations it would seem that the convulsions which sometimes occur in hypopituitary hypoglycemia may be accounted for by the same mechanism which Cannon has described as producing those which occur during low blood sugar states from induced, or spontaneous hyperinsulinism.

Since 1912, many other clinicians have observed epilepsy associated with hyperpituitarism, but there is a difference of opinion regarding their relationship. Cushing[26] writes in reply to an inquiry regarding his present views on pituitary epilepsy:

"Pituitary epilepsy is a very vague term and perhaps I said more about it in my old monograph on the pituitary body than I was justified in saying."

Talbot,[27] in his recently published book on "Epilepsy," in discussing the relationship between the pituitary and epilepsy, quotes Tucker[28] as finding in 200 epileptics 14 per cent in which the adenomacity could be referred to the pituitary alone, and Leahey[29] as believing that "there is a definite relationship between hyposecretion of the hypophysis and epilepsy." Talbot concludes as follows:

"In spite of the many careful studies that have been made, data are still too contradictory to permit the formulation of satisfactory conclusions. About all that can be said is that there seems to be a relationship between pituitary functions and some types of epilepsy. It is not even clear which condition is primary and which secondary. The results of administration of pituitary substance are of little conclusive value, for most of the data collected are poorly controlled or too meager to permit generalization."

Two cases of epileptiform convulsions associated with hypopituitarism are reported to illustrate their relation to each other. The primary diagnosis in each was dyspituitarism. No

doubt the stage associated with the rapid growth and increase in weight was due to the excessive secretion of the pituitary hormone, and ended about the period of adolescence when the hypopituitary stage came on. Then the islands of Langerhans without the regulating effect of the antagonistic pituitary hormone began to secrete an excess of insulin (hyperinsulinism) and hypoglycemia, with *petit mal* and *grand mal* attacks resulting.

Case 6.—K., aged 17, height 5 feet 10 inches, weighed 219 pounds. He weighed 238 pounds at the age of 16.

Brief mental lapses were of almost daily occurrence. He was sleepy after attacks. He had had six *grand mal* attacks in the last four months. He had a voracious appetite and ate excessively of sweets.

The family history was negative.

He was of normal size at birth, but became very much underweight from repeated illnesses, including colitis, acidosis, influenza, otitis media, and so on. He did not walk until he was 2½ years of age. He had convulsions once at the age of four years. Soon afterwards he began having attacks of mental lapses, when he became frightened from seeing "little men." At about five years of age he began to grow, and at 10 years of age had an enormous appetite. He craved sweets. At 13 he weighed 175 pounds and at 16, 238 pounds. He has large shoulders and hips, long arms, large hands and feet, and is very powerful physically.

The primary diagnosis was dyspituitarism in the hypopituitary phase.

The secondary diagnosis was hyperinsulinism.

Glucose tolerance test at the beginning of treatment showed fasting sugar 0.006, 1 hour 0.120, 2 hours 0.100, 3 hours 0.066 2/3, 4 hours 0.066, 5 hours 0.066, 6 hours 0.066.

The glucose tolerance test six weeks later, after taking pituitary tablets, was: fasting 0.100, 1 hour 0.154, 2 hours 0.120, 3 hours 0.100, 4 hours 0.080, 5 hours 0.066, 6 hours 0.080.

Treatment consisted of a hyperinsulinism reducing diet and 42 grains pituitary extract a day. His mentality is improved. He has reduced to 193 pounds. He has had a few attacks of mental lapses and *grand mal* attacks are less frequent.

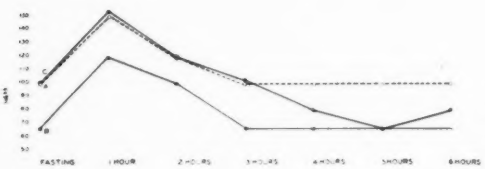

Chart 7. Case 6

Epilepsy and dyspituitarism in hypopituitary phase, associated with hyperinsulinism: (A) average normal blood sugar curve; (B) hypoglycemic blood sugar curve; (C) blood sugar curve after taking pituitary tablets.

DIAGNOSIS

While some of the recurring attacks of *grand mal* and *petit mal* associated with hypoglycemia in epileptic patients may be due to the excessive secretion of insulin by the pancreas, in making a diagnosis of hyperinsulinism it should be remembered that hypoglycemic convulsions can occur from dysfunction of various other organs of internal secretion that play a part in carbohydrate metabolism.

Cases of marked degrees of hypoglycemia due to organic diseases, or functional disturbances of other organs than the pancreas, have been reported as due to (a) deficient glycogenesis in the liver, either from poisons such as arsphenamine or other arsenicals, phenylhydrazine, phosphorus or other hepatotoxins (Cross and Blackford[30]), and from massive tumor of the liver (Nadler and Wolfer[31]); (b) inadequate mobilization of glycogen due to deficient secretion of the suprarenals, as in the case reported by Anderson,[32] in which the autopsy revealed an adenoma of the left suprarenal gland, in Addison's disease (Wadi[33]); (c) pituitary dysfunction (Cushing,[34] Wilder[35]); (d) thyroid disturbance (Zubiran[36]). Apparently ovarian dysfunction may be a factor in the etiology of hypoglycemic convulsions, as in the hyperinsulinism case of Weil:[15] a woman with very low blood sugar levels constantly, who frequently had the symptoms of an insulin reaction between her catamenial periods, but had convulsions only just before and during menstruation. In Weil's case the blood sugar level returned to normal and she had had no convulsions in more than a year when the case was reported.

Every possible cause of hypoglycemia besides pancreatic disease should be considered, including studies of all the organs of internal secretion, and excluding them as factors if possible, before making the diagnosis of hyperinsulinism in an epileptic or narcoleptic patient.

TREATMENT

Time does not permit a full discussion of the treatment of epilepsy and hyperinsulinism. A relatively low carbohydrate, relatively high fat diet in underweight cases has given us excellent results. It is desirable to dispense with drugs, particularly the bromides, if possible; though their use should not be discontinued until after a few days of dieting. If the convulsions cannot be controlled by dieting in hyperinsulinism, sur-

gery may be resorted to with the hope of relief either by the removal of an adenoma of the islands of Langerhans, if present, or by resection of a part of the pancreas. Operations on the pancreas, however, should not be undertaken until it is proven that the convulsions are due to insulogenic hypoglycemia and cannot be controlled by dieting. When I say dieting I do not mean giving the patient a printed diet list and leaving the amounts that he takes to him, because haphazard dieting is as unsatisfactory in hyperinsulinism as it is in diabetes. The hyperinsulinism patient's diet should be adapted to his particular nutritional needs, as much as if he had the opposite disorder of insulin secretion, diabetes mellitus.

It is necessary in the severe cases of hyperinsulinism associated with epilepsy and epileptiform convulsions for the patient to learn to weigh and measure his food and to calculate the menus of his three daily meals in grams and calories as worked out by the clinician to meet his nutritional needs. Manifestly the overweight hyperinsulinism patient, and many of them are overweight, should not have the same diet as the underweight and undernourished epileptic. Therefore in such cases a short stay in a hospital until the patient's nutritional needs can be determined and until he can be taught the simple principles of nutrition needed in his case, is as important as it is in the management of diabetes.

If hypopituitarism is a factor the pituitary hormones may be given, either in tablets or hypodermatically. The tablets are preferable, but require large doses, 4 to 8 two (2) grain tablets three times a day. In giving the pituitary hormones it is advisable to examine the urine for sugar and to check up on the blood sugar every few days, because excessive doses will produce glycosuria and hyperglycemia. The patient's dose of pituitary tablets is an individual factor. Just enough should be used to prevent hypoglycemia and to keep the fasting blood sugar level at about the normal (120 milligrams per cent).

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HYDROPNEUMOPERICARDIUM*

REPORT OF CASE WITH SUMMARY OF THE RECENT LITERATURE

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In January, 1931, Shackelford[1] reported a case of hydropneumopericardium and summarized the literature of the previous one hundred years. He found records of only 76 cases in addition to the one he described. Reports of 3 additional cases (those of Brailsford,[2] Langer[3] and Bravo[4]) have appeared in the literature since this paper. To these is added the case described below, which is the eighty-first case of hydropneumopericardium to be reported during a period of over one hundred years.

SUMMARY OF CASES IN THE RECENT LITERATURE

Brailsford's case was that of a man, aged 40, who had had symptoms suggestive of pulmonary tuberculosis for five years. He came under the author's observation because of severe dyspnea of five months' duration. No other symptoms suggesting cardiac pathology could be elicited and there were no physical signs of hydropneumopericardium. Fluoroscopic and roentgenologic examinations were made because of the marked dyspnea. They showed fluid and air in the pericardial sac, together with lung changes suggestive of chronic phthisis. Similar studies one month later showed no change. Three months after the original examination the x-ray studies were repeated. To the astonishment of the author the whole appearance had changed. No fluid or air could be demonstrated in the pericardial sac and the heart shadow appeared to be normal. The patient said that he had "vomited" a large quantity of foul-smelling matter since the previous examinations.

The author stated: "It would be remarkable to get such a complete evacuation and apparent healing and improvement in the patient's general condition if the fluid in the pericardium had been fetid pus containing gas-producing organisms and I am inclined to the opinion that it was rather of the nature of a pericardial effusion following rupture of the pericardium and pleura with entrance of air which was later absorbed. The appearance of the lung fields suggests that the underlying cause is tubercle, but no tubercle bacilli have been found in the sputum on any occasion."

Langer's case was that of a man, aged 51, who had had a positive diagnosis of bilateral pulmonary tuberculosis. When seen by the author, the patient had high-grade dyspnea, severe attacks of coughing, fever and a rapid weak pulse. The limits of the heart were extended on both sides and the apex beat was not palpable. Shifting precordial tympany was demonstrable and on auscultation a distinct splashing and a sound as of breaking blisters could be heard, in addition to the somewhat dull cardiac sounds. X-ray examination showed fluid and air in the pericardial cavity and an extensive bilateral pulmonary tuberculosis with cavitation. Death occurred on the second day after admission. At autopsy when the sternum was removed the pericardium was tense and protruded from the thoracic cavity like a sphere. It dropped far back when the trachea was severed. There were about 150 c. c. of purulent, greenish-yellow fluid in the pericardial cavity. The pericardium was thickened, its inner surface was covered with thick, strand-shaped masses of fibrin and in its left upper angle there was a narrow cleft about one cm. long. A probe introduced through the cleft passed into a cavity in the lower half of the upper lobe of the left lung. No tubercles could be demonstrated in the heart or the pericardium, but tubercle bacilli were found in the pericardial exudate. Both lungs, especially the left, showed the picture of severe, disseminated, cavernous tuberculosis.

The author believed that the direction of perforation was from the pulmonary cavity into the pericardium. The case then was one of cavernous phthisis, perforation of a cavity into the pericardium and pyopneumopericardium.

Bravo's case was that of a man, aged 41, who developed chills, dyspnea, precordial pain and an increase in fever three days after a phlegmonous angina was incised. When examined by the author there were dyspnea, increase in cardiac dullness, pericardial friction fremitus, extinguishment of sounds and metallic hydrogaseous sounds. X-ray studies made two days later showed fluid and gas in the pericardial sac. At this time the metallic hydrogaseous sounds could be heard more distinctly and they coincided with the cardiac pulsations. Sixty c. c. of yellow pus, having the odor accompanying *B. coli* infection and mixed with bubbles of gas which interrupted the flow of the liquid were obtained by a puncture made outside the mammillary line in the seventh intercostal space. Examination of the fluid showed *B. coli,* pneumococci and *B. perfringens.* The patient died eighteen hours after the operation. Permission for autopsy was not obtained.

The author believed that there was no doubt that the pneumopericarditis, in this case, was due to hematogenic propagation of the phlegmonous inflammatory process from the tonsils.

There are brief references to two other cases. In the case of Buzni[5] autopsy showed bilateral spontaneous pneumothorax complicated by non-infectious pneumopericardium. The author stated: "Upon puncture of the pericardium a large quantity of air was released, and at the bottom of the pericardium a small quantity of absolutely transparent liquid was found." Langer[3] referred to a case Salmony reported in 1921-22 in which there was an accumulation of air and pus in the pericardial cavity as the result of perforation of a gastric ulcer. This case was probably included in Shackelford's summary, though it was not listed among the cases resulting from the perforation of gastric ulcers.

REPORT OF A NEW CASE

A white man, aged 42, a farmer, was seen in consultation, May 30, 1931. His mother, one brother, one half-brother and two half-sisters were living and well. His father committed suicide. One half-sister died of pneumonia. His wife and four children were living and well. There had been no miscarriages.

The patient had malaria as a boy; otherwise he had never been ill. There was no history of any venereal disease and he denied the use of alcohol.

Late in the afternoon of May 29, 1931, while working in a small outhouse, the patient attempted to step from one bench to another. His stride was short and

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he fell forward a distance of about three feet, striking his left anterior chest against the sharp corner of a sturdy box. Immediately he noted a pain in his left chest, his respiration became rapid and he felt faint. About thirty minutes later he was conscious of a striking and peculiar sound, which will be described below, in the region of his heart. Twelve hours after the accident members of his family could hear the sound across the room, a distance of about eight feet.

The patient lived in the country fifty miles from my office and approximately ten miles from his family physician, Dr. C. E. Crew,* DeKalb, Texas. Dr. Crew saw him two hours after the accident, heard the striking sound and recognized its nature. He gave the patient a hypodermic of morphia and strapped his left side.

I first saw the patient the afternoon of May 30, about twenty hours after the accident. He was propped up in bed on his right side and was obviously acutely ill. His temperature was 101° F., his respiratory rate 41, his heart rate 108, and his blood pressure 142 systolic and 80 diastolic.

General physical examination was essentially negative except for the findings referable to his thorax. Respiration was rapid and respiratory excursion was considerably diminished on the left side. The cardiac apical impulse was not visible. In the fifth intercostal space in the mid-clavicular line there was an area of subcutaneous emphysema 2 cm. in diameter. There was no cervical emphysema. Palpation of the sixth rib immediately below the area of emphysema elicited tenderness. No cardiac shock could be felt. The percussion note was tympanitic over practically the entire left chest except at the extreme base, where it was flat. The tympany extended over the precardiac area and it was not possible to elicit any circumscribed precordial tympany as distinct from the above nor accurately to outline the precordium. However, with the patient propped up on his right side, there was dullness in the right fourth and fifth intercostal spaces which extended laterally for a distance of about 3 cm. from the right sternal margin. Auscultation and palpation elicited findings consistent with a diagnosis of pneumothorax and a small hydrothorax on the left side.

As long as the patient remained in the position in which he was found, auscultation of the heart revealed no striking findings. Both heart sounds were fairly distinctly heard, but more to the right than normally, being best heard over the sternum, and there were no abnormal sounds. When the patient was raised to the sitting position there was no demonstrable shift of the tympany over the precardiac area nor of the area of dullness to the right of the sternum, but the sign that is pathognomonic of hydropneumopericardium became audible at once. It could be heard with the unaided ear at a distance of six to eight feet from the patient. On stethoscopic examination this sound was found to be synchronous with cardiac systole and it was the "loud, metallic, splashing sound of water being flipped in a closed cavity containing air." The patient likened it to the noise made by suddenly moving a hot water bottle partly filled with water. The sound was loudest directly over the heart. It bore no time relation to respiration and was not influenced by sudden movements of the body. After the patient had been sitting about five minutes the sound could no longer be heard with the unaided ear, but it was audible with the stethoscope as long as he was able to remain upright, about ten minutes. When he resumed the semi-lying position the sound could be heard again with the unaided ear. It gradually lessened in intensity and soon could not be heard even with the stethoscope.

A specimen of urine was negative for albumin and sugar and for microscopic elements. Examination of the blood showed an erythrocyte count of 5,200,000, a leucocyte count of 14,500, and a hemoglobin concentration of 85 per cent. On differential count neutrophils were 80 per cent, and lymphocytes 20 per cent. No other laboratory examinations were made.

The patient was allowed to remain at home and symptomatic treatment was continued.

The patient was not seen again until June 21, 1931, twenty-three days after the accident, when he presented himself at my office. He stated that members of his family were able to hear the splashing sound for five days after the accident and that he was conscious of it for seven days. He remained in bed for sixteen days, left the house on the eighteenth day and returned to light work on the twentieth day.

Physical examination on June 21, 1931, was entirely negative except for tenderness over the left sixth rib anteriorly. Roentgenologic examination revealed a fracture of this rib at the midclavicular line and a questionable fracture of the corresponding costal cartilage.

In a recent communication, the patient stated that he returned to full farm work thirty days after his accident, but that he did not consider himself entirely well. He stated: "That side feels too thick."

COMMENT

This is the eighty-first case of hydropneumopericardium to be reported in over one hundred years and it is the fifth case caused by fractured ribs. Apparently the pericardial cavity contained only a small amount of fluid and air. In addition to hydropneumopericardium, there was in this case a hydropneumothorax on the left side in which the amount of fluid was small.

It is realized, of course, that the diagnosis in this case might be questioned. It was not possible to demonstrate shifting tympany over the precordial area, one of the important signs; x-ray studies could not be made soon enough to demonstrate fluid and air in the pericardial sac; the presence of hydropneumothorax made differential diagnosis more difficult, and fortunately material was not available for postmortem studies. In support of the diagnosis there were: (1) a fractured rib, demonstrated by physical and roentgen examination, with a fragment sharp enough to puncture the pleura and presumably the pericardium; (2) air outside the lung, ready to enter a pericardial rent; and (3) the very loud, metallic, splashing sound synchronous with cardiac systole, the most characteristic sign of hydropneumopericardium.

*Dr. C. E. Crew kindly gave me his permission to report this case.

Hydropneumothorax is one of the conditions from which hydropneumopericardium must be differentiated. Both were present in this case. Under these circumstances it is difficult to describe the signs so that separation seems clear-cut, but when one has had the opportunity of studying a case of hydropneumopericardium of this type and has noted the location, the character, the intensity and the relation to the cardiac cycle of the auscultatory finding, one has no hesitancy in asserting that the condition exists regardless of the presence of complicating diseases.

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SOME OBSERVATIONS ON THE ECZEMATOUS REACTION EVOKED BY SKIN DISEASES*

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The purpose of this paper is to call attention to the fact that numerous skin affections precipitate the eczematous reaction in the integuments of susceptible, or eczema-potential individuals.

It is not widely held or recognized that cutaneous disease, *per se*, once it appears on the skin, may act as an irritant, which, on occasion, evokes the phenomenon called eczema in one or another of its forms.

A thorough review of the present day knowledge of eczema should be offered as a preface to the discussion of this subject. The allotted time will not permit that. However, the work of Bloch, Jadasohn, Coca and other research workers is familiar to all dermatologists, as well as the views of many able commentators here and abroad, including Walter Highman, whose prescience and advanced opinions have led him often and forcibly to call attention to the fact that, after all, eczema is only a special kind of dermatitis, a peculiar manifestation of inflammation of the skin of unique character. His definition has not been excelled:

"What is called eczema," he wrote, "like what is called dermatitis venenata, is due to the response of a predisposed skin to a precipitating agent."

"Eczema is a catarrh of the skin possessing the pathologic characteristics of an exudative inflammation. Its origin depends upon an interplay between various known and unknown local and predisposing causes to which the skin lesions are reactions."

Bloch has written:

"Eczema is an idiosyncratic reaction of the skin toward a number of irritants (substances) almost invariably alien to the body in nature, which (generally) come in contact with the skin *via* an exogenous route, or (more rarely) *via* an endogenous route."

In other words, eczema represents a biochemical reaction, differentiated from simple, noncatarrhal dermatitis by peculiar and unique pathological phenomena: unknown protoplasmic quanta, Highman's factor X, determine the essence of the reaction; our guesses at the nature of the biophysical and biochemical mechanics of the process are dignified by Greek words, and pseudoprofundity; little else.

Sabouraud, setting an admirable example in simplicity, has said something like the following:

"I want to state that we shall never explain eczema fully until we can explain a matter we all know to be true from simple observation. One washerwoman, after she has worked for weeks and months in soap and water, will develop eczema of the hands. There is difficulty in healing it. And when she goes back to her task it will return. Her neighbor scrubbing beside her will remain sound, abuse her hands as she will; and I will find when I come to look into it that the eczematous laundress had a father or a mother who was eczematous. And I will learn, if I wait, that her daughter will have a disorder too, produced, if not by soap and water, by some other cause; while the daughter of the washerwoman who does not suffer catarrhal inflammation of the skin from engaging in her occupation will never have eczema, and, in turn, neither will her children, if she marries a man free like herself from predisposition to this curious instability of the skin. It is the why and the wherefore of this we need to understand in order to elucidate the basis of the pathology that eludes us."

Here, no doubt, is the basic cause: external and internal, that is, exogenous and endogenous factors, may be classified as exciting or evocative causes; but the basic primary cause of eczema seems to lie in some innate, inherent char-

*Chairman's Address, Section on Dermatology and Syphilology, Southern Medical Association, Twenty-Seventh Annual Meeting, Richmond, Virginia, November 14-17, 1933.

acteristic of the cell itself, a sensitiveness to insult that may be inherited, and, as it seems from experimental work (Bloch), sometimes acquired.

Genetics, itself an incomplete and until very recently a neglected science, has left the subject of the inheritability of the eczematous tendency almost unconsidered. A recent volume by Cockyane dealing with inherited defects of the skin passes the subject with scant notice; but the clinical observations of a long list of astute observers give us leave to hold tentatively that the individual, whose cutaneous covering carries a chip on its shoulder, transmits through the genes, probably as a dominant, to certain of his sons and daughters that inherent irritability of his skin cells which, roused to reaction by suitable insult, expresses itself in what we call eczema.

Numerous writers have called attention to the fact that the characteristic lesions of certain skin diseases become eczematized. For example, psoriasis is one in question. Morris and others have pointed out that scabies may be complicated by eczematization, a condition usually ascribed to scratching, or with reason, to the parasite of the disease, although but few observers have pointed out that this occurs only in cases with an eczematous background.

Among many who have at one time or another directed notice to the phenomenon of eczematization in connection with the eruption of skin diseases were Bockhart, and Engman of St. Louis, the latter describing infectious eczematoid dermatitis, and pointing out probably an example of the phenomenon to which this paper is devoted, although in 1902 the knowledge of the subject of eczema did not permit clear interpretation of the manifestation. From study of Engman's original article there is no reason to believe he suspected that eczematous reactions following and associated with certain staphylococcic infections occurred only, when and if, individuals of an eczematous background were infected.

Fordyce, in 1911, discussing similar cases, came nearer to understanding what appears to be the real facts in the premises than anyone had before, and as few have since. He said, contrasting the more complex types of cutaneous reaction produced by pyogenic organisms on the skin (eczematous, urticarial) with the usual simple non-exudative inflammatory reactions such as cellulitis, lymphangitis, and so on:

"Other factors probably enter into the etiology, as individual peculiarities of reaction, susceptibility, etc."

But in spite of these and other scattered glimpses of the reality, a review of the literature and of current dermatologic discussions makes it seem evident that the reasons for these too seldom recognized phenomena have not yet been adequately understood and thought out to the extent possible in the light of present knowledge. In short, most of us have yet to adopt for use in our daily thinking the concept that the eruptive phenomena of nearly all skin diseases, at one time or another, act upon the skins of persons subject to eczema just as other eczema producing irritants do.

They evoke the biochemical reaction called eczema. This may be confined in one degree or another to the lesions; it may extend to uninvolved skin. Upon the cutaneous envelope of Sabouraud's scrubwoman sulphur may excite eczema as well as soap and water; likewise, pityriasis rosea may arouse in her skin some such reaction, which then presents itchy, irritable lesions raised in the *type d'embleé*. An eczema-potential maker of automobile batteries may, sooner or later, suffer eczema of the arms and face excited by the fumes of sulphuric acid. Upon the person of the same individual impetigo, infection by the pityrosporon of Malassez, larva migrans, and other skin diseases, may precipitate a reaction which complicates the clinical picture of the given disease, intensifying or confusing its symptoms. From herpes zoster to dermatitis herpetiformis, from tinea tonsurans to furunculosis the reaction may be found and recognized, once it is kept in mind and looked for.

Accepted as a working hypothesis, this concept plays an invaluable role in the study and treatment of many skin dyscrasias. It explains in large measure the controversial debates between good observers on many points. For the sake of example, it makes plain why one keen clinician holds that x-ray is useful in the treatment of pityriasis rosea, or in chronic vesicular phytosis of the feet, while another of equal perspicacity believes it valueless. The one has treated Gibert's disease complicated by the spongiose state, or phytotic infection marked by an eczematous reaction with acanthosis evoked by the presence in the skin of the characteristic lesions of ringworm and its toxins. Treatment of such cases by radiation results in a satisfactory response, while such treatment of their simple and uncomplicated manifestations does not.

Thus, as a clinical help to interpretation of the pathology of individual cases it aids greatly in adapting treatment. In the matter at hand it substitutes reason in some part for what we have come to know as dermatological instinct.

SUMMARY

Attention is called to a practical concept based on the present knowledge of the phenomenon called eczema. It has been easy to conceive the excitation of eczema by the action of wind and sun, varying degrees of humidity, cold, and heat, when the individual exposed to such irritants was an eczema-potential subject. Turpentine, formaldehyde and a thousand other agents and substances, physical and chemical, are capable of evoking in such skins the peculiar inflammation.

Too, while we know little of the essential and intimate mechanism of the production of the characteristic eruptions of cutaneous disease, it requires no profound imagination to conceive them, and the influences producing them, as playing the role of excitant of the eczematous reaction in one and the same field. Numerous skin affections by or through the actual presence of their rashes or specific toxins will act in this way on susceptible integuments. The eczematization precipitated may be of a degree peculiar to the disease in question; it may be confined in extent to the actual lesions themselves, masked, complicating the symptoms, objective and subjective; or the eczematous manifestation may spread to parts of the skin spared by the evocative eruption itself.

In fine, the statement is ventured that once general clinical observation is focused through this concept, it will abundantly prove that the clinical pictures of many skin diseases are at times altered by the coeval appearance of the spongiose state of eczema. It is as much the rule as the exception. The speaker believes it will in time do away with many clumsily conceived distinctions with which dermatological nomenclature is burdened, and its application should do much to clear up certain disputed points in the domain of dermatologic pathology.

It leaves open for research another large and almost unexplored field which will not be fully covered until the essential problem of eczema itself is finally resolved in the terms of biochemistry and biophysics, which, in our present state of advancement, we study, as it were, in the kindergarten of science.

PAROXYSMAL HEMOGLOBINURIA, WITH A CASE REPORT*

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Paroxysmal hemoglobinuria is a rare disease, usually occurring in children with congenital syphilis, or in adults with late syphilis. It is characterized by hemoglobinuria following chilling, or less frequently, following exertion or emotion.

Following Dressler's[1] discussion of "Intermittent Albuminuria and Chromaturia" in 1854, several well recognized clinical cases of the condition were reported, but the impetus to study the disease more fully came with the demonstration by Donath and Landsteiner[2] in 1904 of a specific autohemolysin in the blood of individuals with paroxysmal hemoglobinuria. These investigators showed that the serum of these patients contained an autohemolysin which united with the red blood cells only at low temperature and that warming with complement was necessary to complete the reaction.

The test for the autohemolysin, known as the Donath-Landsteiner reaction, is done as follows: the patient's erythrocytes and serum are mixed, allowed to stand at 0° C. for 7 minutes, and the mixture then incubated at 37° C. for one hour. A positive reaction is evidenced by hemolysis.

It was then understood that the reaction was one of complement fixation, as graphically pictured by Ehrlich in his hypothesis of immunity, with the peculiarity that the amboceptor was fixed only at low temperatures.

The autohemolysin present in the serum of these individuals can be removed by adding a sufficient quantity of washed red blood cells and letting the mixture stand in the cold. The supernatant serum will not then cause hemolysis on being added to a suspension of red blood cells, chilled and heated to 37° C. The red blood cells which were first in contact with the serum may then be washed several times with normal saline (until the supernatant fluid no longer clouds on being heated), complement may be added, the mixture incubated and hemolysis will result, showing that the amboceptor was united to the red blood cells and that the union was fairly stable, many washings failing to break the union.

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*Read in Section on Dermatology and Syphilology, Southern Medical Association, Twenty-Sixth Annual Meeting, Birmingham, Alabama, November 15-18, 1932.

The serum may be inactivated at 56° C. for one-half hour, then mixed with a 5 per cent suspension of red blood cells, chilled and incubated at 37° C. for one-half hour and no hemolysis will occur, but if complement is added from any source, such as guinea pig serum, the mixture chilled and incubated, hemolysis will result. This shows that the heating at 56° C. for one-half hour inactivated the complement, but not the amboceptor, because hemolysis resulted upon mere addition of complement.

Usually these patients have sufficient complement in their serum to complete the Donath-Landsteiner reaction, but sometimes during a paroxysm they use up all their complement and this reaction will not be positive unless complement is added to the mixture. If attacks become frequent a negative reaction results because of the anticomplementary substances in the serum.

Moss[3] believes that complement must be present for the autohemolytic amboceptor to unite with the red blood cells. Kumagai and Ito[4] also believe that complement must be present in the first phase, that is, the chilling, but most investigators have reported that hemolysis occurred when complement was added after the inactivated serum erythrocyte mixture had been chilled and warmed.

In the case to be reported I have attempted to carry out the Donath-Landsteiner reaction with an inactivated serum-red cell mixture to ascertain whether complement was necessary in the first phase, that is, the chilling, but unfortunately inactivating the serum at 56° C. for one-half hour inactivated not only the complement but the amboceptor. The patient's inactivated serum and red blood cell mixture gave a strongly positive Donath-Landsteiner reaction at this time. However, on two previous occasions, about a week apart, his serum was heated to 56° C. for one-half hour and only the complement was inactivated, because upon the addition of complement, chilling and warming, hemolysis resulted in these inactivated serum-erythrocyte mixtures. It is possible that the thermolability of the autohemolysin fluctuates from time to time as observed by York and Mackie,[5] and as occurred in this case.

This autohemolysin has been found present in the blood of some syphilitic patients, especially those with paresis, who have never had attacks of hemoglobinuria. In some of these patients an attack of hemoglobinuria may be produced by chilling, while in others an albuminuria may result.

The majority of patients with this disease have positive blood Wassermann reactions, but the disease has been reported in some individuals with negative Wassermann reactions. In some of the cases with negative Wassermann reactions clinical evidence of syphilis was present.

Burmeister[6,7] believed that in paroxysmal hemoglobinuria the Wassermann reaction might be positive and syphilis still be absent. In reviewing 207 cases from the literature he found clinical indications of syphilis in only 79. In 43 he ruled it out and in the remainder there was no definite information, yet 95 per cent of the 207 cases had positive blood Wassermann reactions. Burmeister believed that the positive Wassermann reaction was induced by the autohemolytic amboceptor. He reports experiments in which he absorbed the autohemolysin from the serum in the cold by means of red cells and this serum gave a negative Wassermann reaction. This, however, was not found to be the case by Smith[8] and MacKenzie,[9] who always found a positive Wassermann reaction, using Burmeister's technic.

I have on several occasions absorbed the autohemolysin from the patient's serum by means of erythrocyte suspensions in the cold and found no change at any time in the strength of the Kahn and Hinton tests, as will be reported in the case history. However, all the Wassermann reports were anticomplementary, whether the autohemolytic amboceptor was present or absent from the serum. These anticomplementary reactions were present before and after attacks of hemoglobinuria, and, on occasions, when the Donath-Landsteiner reaction was strongly positive.

That the condition is not always due to syphilis is suggested by the observations of Kaiser and Bradford,[10] who report a case of hemoglobinuria in a boy 2½ years of age during the prodromal stage of chickenpox. The Donath-Landsteiner reaction was positive and the blood Wassermann reaction was reported positive plus 2. The boy had hemoglobinuria for six days before the eruption appeared. Following this one positive Donath-Landsteiner reaction all others were negative. However, these authors did not add complement to any of their negatively reported Donath-Landsteiner reactions. Several subsequent blood Wassermann reactions were reported negative. Both parents had negative blood Wassermann reactions. The authors believe this to have been a case of hemoglobinuria due to an infection, but have no explanation for the one positive Donath-Landsteiner reaction. It is interesting to note the plus 2 positive Wassermann reaction at the time the Donath-Landsteiner reaction was present.

Thurmon and Blair[11] obtained a positive Donath-Landsteiner reaction in a half-brother of one of their patients who had paroxsymal hemoglobinuria and congenital syphilis, although there was no clinical or serologic evidence of syphilis in the half-brother.

These patients may be symptom-free between attacks or they may have symptoms referable to secondary anemia, a frequent finding due to the chronic loss of blood. Some individuals may

have symptoms referable to the syphilitic infection. They frequently have urticaria, and Raynaud's syndrome is not an uncommon accompaniment.

Typical attacks usually occur during the winter months, although some patients have paroxysms of hemoglobinuria during the summer, or following emotion or exertion. MacKenzie[9] reports spontaneous attacks in a seven-year-old congenital syphilitic boy in the middle of July in New York City.

Between the chilling and the paroxysms the time may vary from a few minutes to eight hours. The writer's patient complained of severe pain in the lumbar region ten minutes following immersion of the feet and hands in ice water. The attack usually begins with malaise, pain in the lumbar regions and epigastrium, followed by a chill and temperature rising to 101 or 104°. The fever usually lasts about six to ten hours. Cyanosis and blanching of the extremities are present in some cases. The urine passed during the attack is "mahogany" colored, and may be dark colored for the next two or three voidings. Spectroscopic examination of this urine shows the color to be due to oxyhemoglobin and methemoglobin. During the chilling period there is usually leucopenia with a relative lymphocytosis, but within an hour there occurs a leucocytosis with a definite neutrophilia. The blood pressure frequently rises during an attack. In some cases the liver and spleen enlarge. Following an attack there is frequently a slight jaundice.

Abortive and larval attacks are said to occur. Hemoglobinuria without constitutional manifestations may occur or the converse has been recorded, namely: the usual constitutional symptoms without hemoglobinuria, although a transitory albuminuria is usually present.

The patient, a negro male, 36 years of age, a hotel bell boy, walked into the Medical Ward on March 11, 1932, being referred from the Out-Patient Department. His chief complaint was "pain over the kidneys" in cold weather, relieved by warmth and followed by the passing of urine which the patient described as looking like "coca-cola."

The present illness was first noticed during the winter of 1918, when the patient was in an army camp in New York. This was the first time the patient had ever been in the North, having lived all his life in Georgia. One night after coming off a two-hour tour of guard duty, he went to a fire to warm himself. At this time he experienced sharp pain over both kidney regions. He then tried to urinate, but was unable to do so for ten minutes, when suddenly something seemed to "break loose" and he passed a large quantity of dark bloody urine. He was hospitalized and given "some sort of treatment" for three months and was free from attacks during the winter of 1919. However, he has had attacks every winter since then. A paroxysm usually starts after the patient warms himself, following exposure to cold weather. He believes that his condition has grown progressively worse each winter, the attacks occurring more frequently and with greater severity. He is never troubled in the summer time.

The past medical history included whooping cough, mumps, and malaria. He was in bed with what he called "typhoid fever and pneumonia" for six months when twelve years old. He recovered, felt well for a year thereafter, and became sick again; this time remaining in bed four months. For the past five years he has noticed slight swelling of his ankles at the end of the day's work. He frequently has epigastric pain if he eats anything while he is cold. About eighteen years before he had a sore on his penis and about the same time an eruption on his body. For the past six years he has had gonorrhea. He is not married. His habits are fairly good and he is not addicted to any drugs.

Family History.—His father died at 43 years of age from "typhoid-malaria fever." His mother is living and in good health. He has two brothers living. One of the brothers suffers with a similar condition to the patient's, although not quite so marked. The other brother is in good health. Two brothers and a sister are dead, the cause being unknown.

Physical Examination.—His temperature is 98, pulse 60, respiration 21, blood pressure right arm 102/51, and left arm 100/57. The man is well developed and fairly well nourished. The physical examination, aside from moderate paleness of the mucous membranes and a scar on the glans of the penis, is entirely negative. The fundi are normal.

It was an unusually cold day when the patient was admitted and a specimen of urine passed immediately was of mahogany color. At no other time during his stay in the hospital was any dark urine passed except during an induced attack. (See *Table 1*, routine blood work.)

The urine the following day was essentially negative. The test for urobilin was negative. The phenolsulphonephthalein output was collected in one hour following intravenous administration, 150 c. c., was 60 per cent. The blood chemistry showed nonprotein nitrogen 24 mg. per 100 c. c. and a sugar 111 mg. per 100 c. c. of blood. The blood calcium was 11.3 mg. per 100 c. c. serum. The Van den Bergh was less than 1 mg. per 100 c. c. serum. Lumbar puncture was done and normal fluid with a negative Wassermann reaction and Lange colloidal gold were found. The resistance of the erythrocytes to hypotonic (sodium chloride) solutions was normal. Blood smears were repeatedly negative for malaria. Three wet preparations were negative for the sickling phenomenon. The reticulocyte count was 1.2 per cent. The patient belonged to Group III of the Moss classification. The stools were essentially negative, as was the sputum. The blood Wassermann test was anticomplementary, the Hinton test positive, and the Kahn test 4 plus. This test was repeated three times with similar results. On two occasions the serum was separated as soon as the blood clotted.

The autolysin was absorbed from some of the serum by a heavy suspension of erythrocytes in the cold and the Wassermann, Hinton and Kahn tests were made on the supernatant serum. The Wassermann reaction was anticomplementary, the Kahn test 4 plus, and the

Table 1

	W.B.C.	R.B.C.	Hemo.	Smear	P.M.N.	L.L.	S.L.	Trans.	0
3/12/32	6,800	3,350,000	60	Malaria neg.	59	6	32	2	1
3/17/32	7,100	3,700,000	65	Malaria neg	53	5	42		
Sickle cell preparation negative.									
3/19/32	8,400	3,360,000	70	Malaria neg.	62	4	32	2	
3/28/32	8,160	4,100,000	70	Malaria neg.	63	5	31	1	
Sickle cell preparation negative.									
4/4/32	8,600	3,750,000	70	Malaria neg.	76	8	16		
4/ 7/32	10:00 a.m.	Day of induction of an attack of hemoglobinuria:							
12:15 p.m.	7,250	3,610,000	68		86	2	11		1
1:15 p.m.	9,350	3,530,000	68		83	7	8	2	
2:15 p.m.	12,000	3,290,000	68						
3:10 p.m.	13,950	3,210,000	68		77	2	21		
4:20 p.m.	13,650	2,620,000	65		75	4	19	2	
Sickle cell preparation negative.									
8:15 p.m.	9,350	2,810,000	65		77	1	22		
9:15 p.m.	8,750	2,530,000	64		74		25	1	
4/ 8/32, 1:00 a.m.	7,750	2,900,000	65		65	3	32		
4/10/32	6,400	2,810,000	55		59	3	38		
4/13/32	6,900	2,830,000	69		49	5	45		
4/15/32	6,650	3,170,000	70						

Hinton test positive. The remaining erythrocyte mixture, washed many times, hemolyzed on the addition of complement and incubation at 37° for one hour.

All of the following tests were carried out qualitatively, unless otherwise indicated, but the proportions and volumes were kept constant. The erythrocyte suspension used throughout was 5 per cent. By chilling at 0° is meant temperatures varying from 0 to 3° C. By the word "incubation" is meant 37° C. for one hour; "Pt." means patient; "Pt's. cells" will refer to the red blood cells.

The Donath-Landsteiner reaction was strongly positive. Although warming was usually carried out at 37° C. for one hour, hemolysis often occurred five minutes after incubating at 37° C.

The autolysin was then absorbed from the patient's serum in the following manner: a 5 per cent suspension of the patient's washed erythrocytes and the patient's serum were mixed and centrifuged at 0° for one-half hour. (a) At the end of this time the supernatant serum was removed. (b) The erythrocytes were then washed four times with normal saline, the fluid from the first washing being saved. (c) The erythrocytes were then made up to a 5 per cent suspension in normal saline.

(1) 1 c. c. supernatant serum plus 1 c. c. 5 per cent red blood cell suspension 0° ½ hour plus 37° 2 hours= no hemolysis.

(2) 1 c. c. of washings from (B) plus 1 c. c. 5 per cent, plus 1 c. c. guinea pig complement, 0° ½ hour, 37° 2 hours=no hemolysis.

(3) 8 c. c. guinea pig complement 1-20 plus 2 c. c. 5 per cent suspension of red cells chilled ½ hour 0° plus 37° two hours=hemolysis.

This also showed that the amboceptor-antigen union was stable and that the amboceptor could not be washed free from the erythrocytes with normal saline as shown by lack of hemolysis in No. 2.

The following tests were done to demonstrate that warming was necessary after chilling to cause hemolysis and that complement had to be present at least in the final phase:

(1) 1 c. c. Pt's. serum, plus 1 c. c. red cells, 0° ½ hour=no hemolysis; plus incubating, 37° C. 2 hours =hemolysis.

(2) 1 c. c. Pt's. serum, plus 1 c. c. red cells, 37° C. 2 hours=0.

(3) 1 c. c. Pt's. serum inactivated at 56° C. for 20 minutes, plus 1 c. c. red cells, 0° ½ hour and 37° C. 2 hours=no hemolysis; plus 1 c. c. guinea pig complement 1/20, 0° ½ hour, plus 37° C. 2 hours=hemolysis.

Ehrlich showed that if a ligature was tied around a finger of the patient and the finger immersed in ice water for 10 to 15 minutes, a hemoglobinemia occurred locally in this finger. This test in the writer's patient was positive, the serum being bright red; whereas, the serum from a finger from the other hand was a clear straw color.

Some writers report hemoglobinemia merely from venous stasis in these patients, but this procedure caused no hemolysis in this case.

It was suggested that perhaps there is a cycle of hemolysis or hemoglobinemia in these patients. Blood was drawn in a Wright's tube from an ear puncture every hour for 14 hours. The serum was clear and straw-colored in each.

On April 7, 1932, Rosenbach's test (that is, the production of an attack of paroxysmal hemoglobinuria by immersion of the feet in ice water) was carried out. Just prior to carrying out the test the Donath-Landsteiner reaction was found to be strongly positive. At 10:00 a. m. the man's feet and hands were immersed in ice water for about 30 minutes. Ten minutes after immersion the patient began to complain of pain across the back, especially in the region of the kidneys. This pain was sharp and constant. Temperatures were taken every 30 minutes. At 11:20 a. m. he had a severe shaking chill and the pain in his back shifted to the epigastrium. At 1:00 p. m. he began to feel better. There was no change in the physical signs for the next 24 hours. At no time were the liver and sp'een palpable.

The temperature rose to 99.8° F. 30 minutes after immersion and at 12:30 p. m. was 102°, gradually declining to normal at 8:00 p. m. (see *Table 2*).

The blood pressure for five readings before the ice

Table 2

TEMPERATURE AND BLOOD PRESSURE DURING THE ATTACK OF HEMOGLOBINURIA

4/7/32	Temperature	Blood Pressure
10:00 a.m.	98.6	104/56
10:30 a.m.	99.0	
11:00 a.m.	99.0	
11:30 a.m.	100.8	
12:00 noon	102.0	
12:30 p.m.	102.0	112/81
1:00 p.m.	102.0	
1:30 p.m.	102.0	119/78
2:00 p.m.	100.0	
2:30 p.m.	99.8	116/76
3:00 p.m.	99.6	
3:30 p.m.	99.0	
4:00 p.m.	98.8	108/69
7:00 p.m.	98.8	112/70
9:00 p.m.	98.6	106/61

water immersion averaged 105/57. It rose slightly during the attack, averaging 113/72. The blood pressure readings for the next two days averaged 105/58 (*Table 2*).

At 12:30 p. m., 2½ hours after the ice water immersion, the patient passed 125 c. c. of mahogany colored urine. This gave the spectrum of methemoglobin and oxyhemoglobin. Bubbling carbon dioxide through the urine did not change the spectrum. At 2:30 p. m. 175 c. c. of urine were passed, but this was not so dark as the first specimen. Both urines gave strongly positive reactions for occult blood (Benzidine test).

The urobilin test was strongly positive. The patient then did not pass any urine until 2:00 a. m. (12 hours) and it was feared that he had supression, at which time he passed 40 c. c. of straw-colored urine, which gave a faint test for occult blood. The first two specimens became solid upon heating, whereas the third specimen gave a two plus reaction with the heat and acid test for albumin. Microscopic examination of the first two specimens, aside from much non-structural debris and a few shadows of red cells, was essentially negative.

Blood was drawn from an arm vein at 10:20 a. m. (20 minutes after chilling). The serum was removed as soon as the blood clotted. The erythrocytes were washed with normal saline. A portion of this serum was placed in the cold at 0° in contact with a heavy suspension of the patient's erythrocytes for 2 hours. The following tests were then carried out. First the serum that had been removed as soon as the blood clotted was used.

(1) 0.6 c. c. serum, plus normal red cells, 0° 7 minutes, 37° one hour=no hemolysis.

(2) 0.6 c. c. serum, plus Pt's. cells, 0° 7 minutes, 37° 1 hour=no hemolysis.

(3) 0.6 c. c. serum, plus normal cells, plus 6 c. c. guinea pig comp., 0° 7 minutes, 37° 1 hour=no hemolysis.

(4) 0.6 c. c. serum, plus Pt's. cells, plus 6 c. c. guinea pig comp., 0° 7 minutes, 37° 1 hour=no hemolysis.

This demonstrated that the patient's serum was inactive, and that the inactivity was not due to absence of complement.

Now the erythrocyte serum mixture which had been in the cold two hours was centrifuged and the serum pipetted off. The erythrocytes were then washed 4 times with normal saline. The first washings from the erythrocytes was saved. The following tests were then carried out. The red blood cells which had been mixed with the serum and chilled will be designated here as W.R.C.C.

(1) 0.6 c. c. Pt's. serum (from 10:20 a. m.) plus 0.4 c. c. W.R.C.C., 0° 7 minutes, plus 1 hour incub.=no hemolysis.

(2) 0.6 c. c. normal serum, plus 0.4 c. c. W.R.C.C., 0° 7 minutes, plus 1 hour=no hemolysis.

(3) 0.6 c. c. normal serum, plus 0.6 c. c. guinea pig comp., plus 0.4 c. c. W.R.C.C., 0° 7 minutes, plus 1 hour=no hemolysis.

(4) 0.6 c. c. Pt's. serum, plus 0.6 c. c. guinea pig comp., plus 0.4 c. c. W.R.C.C., 0° 7 minutes, plus 1 hour=no hemolysis.

Demonstrating absence of amboceptor.

The white blood count rose and the red blood count fell during the attack. There was a neutrophilia during the attack (*Table 1*).

The next day, April 8, 1932, another Donath-Landsteiner test was carried out. The reaction was weakly positive. At the same time a Donath-Landsteiner test was carried out on the patient's spinal fluid. To one of the specimens some guinea pig complement was added. The results were negative. Five days later the Donath-Landsteiner reaction was strongly positive. At this time some spinal fluid was withdrawn from the patient and another Donath-Landsteiner reaction was set up.

(1) 1 c. c. spinal fluid, plus 0.6 c. c. Pt's. cells, 0° 7 minutes, plus 37° 1 hour=no hemolysis.

(2) 1 c. c. spinal fluid, plus 0.6 c. c. normal cells, 0° 7 minutes, plus 37° 1 hour=no hemolysis.

(3) 1 c. c. spinal fluid, plus 0.6 c. c. Pt's. cells plus 1 c. c. complement 0° 7 minutes, plus 37° 1 hour=no hemolysis.

(4) 1 c. c. spinal fluid, plus 0.6 c. c. normal cells and 1 c. c. complement, 0° 7 minutes, plus 37° 1 hour =no hemolysis.

It was evident that no amboceptor existed in the cerebrospinal fluid. Bilirubin studies on the blood were carried out by means of the Van den Bergh test (*Table 2*).

An attempt was made to study quantitatively the urobilin content of the urine by diluting the urine until the characteristic spectrum disappeared, but the method was not considered accurate enough to report results in figures. The spectrum was, however, positive for urobilin during the next 24 hours.

On April 9, 1932, the blood uric acid was 6 mg. per

Table 3

VAN DEN BERGH TEST FOR BILIRUBIN IN SERUM DURING AN ATTACK OF HEMOGLOBINURIA

	Mgs. Bilirubin per 100 c. c. Serum
4/7/32	
Time	
Two hours before the attack	0.805
10:00 a.m. Hands and feet immersed in ice water.	
11:15 a.m.	1.125
12:30 p.m.	1.237
1:30 p.m.	1.500
2:30 p.m	2.289
4/8/32	
11:00 a.m.	1.680
2:30 p.m.	0.825

100 c. c., the nonprotein nitrogen 25 mg., and the sugar 133 mg. per 100 c. c.

On April 15, 1932, at 11:30 a. m., the patient suddenly had a generalized convulsion with loss of consciousness lasting about 10 minutes. Twenty minutes later, aside from exhaustion, he stated that he felt quite well. He stated that he had never had such an attack previously. Soon after the seizure the patient passed some straw-colored urine which contained large amounts of phosphate crystals. The test for occult blood was negative.

The patient now became tired of his stay in the hospital and signed a release card. An endeavor was made to get him to return for antisyphilitic treatment, but he soon left town.

COMMENT

There are a few features in this case worthy of comment. The description by the patient that his urine during attacks looked like "coca-cola" is a very good one. He frequently noted that he did not pass this dark urine following exposure to cold until he became warm again. Just what treatment he had in 1919 is conjectural, but the history of three months' treatment followed by the absence of attacks the following year in a cold climate, suggests that it was probably antisyphilitic.

He had none of the vasomotor phenomena which are frequently observed during attacks. The history that his brother had similar attacks is interesting. An attempt to get his brother to come into the hospital for study was unsuccessful.

The negative Donath-Landsteiner reaction 15 minutes after chilling the patient is noteworthy. Since some patients use all their complement during attacks, active guinea pig complement was added to the Donath-Landsteiner test, but the reaction still remained negative at this time.

A red blood cell suspension in contact with the serum in the cold failed to absorb any autolysin (if present) because addition of complement to these cells, chilling and incubating caused no hemolysis. It seems probable that the patient had used up or bound all his autolysin 20 minutes after the production of an attack and that it was slowly reformed because on the following day the Donath-Landsteiner test was weakly positive, even upon the addition of complement. The bilirubin content of the serum rose rapidly following the production of hemoglobinuria, but gradually returned to the pre-chilling level in 24 hours.

There is no record in any of the comprehensive reviews of the literature, such as those by Mackenzie[9] and Puris[12] that the Donath-Landsteiner reaction has been carried out on the spinal fluid. This was done twice upon the writer's patient; once when the Donath-Landsteiner was weakly positive in the blood (24 hours after the Rosenbach test), and later when the Donath-Landsteiner was strongly positive in the blood. To both tests guinea pig complement was added. Both Donath-Landsteiner reactions on the spinal fluid were negative, showing there was no autolysin present. The spinal fluid Wassermann reaction at these times was negative. It would be interesting to carry out the Donath-Landsteiner test on the spinal fluid of patients with paroxysmal hemoglobinuria who have a positive Wassermann in the cerebrospinal fluid.

DIAGNOSIS

Paroxysmal hemoglobinuria must be differentiated from the various other forms of hemoglobinuria which occur in acute infections, malaria, poisoning with potassium chlorate, snake venoms, in pernicious anemia, and hemolytic jaundice.

The history of transitory passing of dark urine during cold weather or following exertion; a positive Wassermann reaction; the presence of a Donath-Landsteiner reaction, and the artificial production of an attack by immersing the limbs in cold water, should serve to differentiate it. There is a condition known as Marsch hemoglobinuria in which a paroxysm of hemoglobinuria may be induced by a long march or walk. This condition is seen most frequently in soldiers and is differentiated by the negative blood Wassermann reaction and the negative Donath-Landsteiner phenomenon.

TREATMENT

Antisyphilitic treatment is now considered to be the most effective. Various other forms of therapy have been advocated, such as, autoserotherapy, graded cold foot baths, antihemolytic immune serum and the calcium salts. Chovstek[13] stated that amyl nitrite would sometimes cut short or prevent an attack.

With improvement it has been found by MacKenzie that clinical manifestations cease, the Wassermann reaction becomes negative, and the autolysin disappears from the serum, in the order named.

More recently Inamori[14] reports a case of paroxsymal hemoglobinuria cured following inoculation with *Spirocheta morsus muris*. However, he also gave his patient rather intensive antisyphilitic treatment.

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DISCUSSION (*Abstract*)

Dr. S. S. Marchbanks, Chattanooga, Tenn.—Until I was slated to discuss this paper, I scarcely had a speaking acquaintance with paroxysmal hemoglobinuria, and as yet I know only that there is such an entity, much in the same fashion that some of us are Democrats or Republicans because our fathers were Democrats or Republicans. In other words, I know there is such a disease because Dr. Rosen and others have said so. A case was observed as early as 1794, and yet I have not seen a case in my own practice. Therefore, I can add nothing statistical to the discussion; however, given a patient who voided "coca-cola" I probably could recognize it as hemoglobinuria, and after Dr. Rosen's illuminating discussion should be able to differentiate it as paroxysmal hemoglobinuria from the other possible causes of hemoglobinuria such as: blackwater fever, scarlatina, typhus, yellow fever, poisoning from nitrobenzol, pyridin, chlorates, sulphonal, carbon monoxide, snake venom; also, severe burns, pernicious anemia, Marsch hemoglobinuria, and so on.

With the aid of a good serologist and the Donath-Landsteiner test, also the Wassermann and Kahn tests, plus observation of the clinical symptoms, particularly the dark urine, lumbar pain and elevation of temperature after chilling, the diagnosis seems possible.

It appears from the literature that the more this condition is observed the more it is believed to be caused by syphilis.

It is interesting to note that in this disease often the Wassermann may be anticomplementary or negative, while the Kahn is positive. It is my understanding that in such instances the Kahn may be depended upon.

It is of further interest that in these cases often the Wassermann may remain positive though the patient may be subjected to chilling and not again develop hemoglobinuria. This seems to add confirmation to my opinion that many cases of syphilis are well, after treatment, regardless of a persistently positive Wassermann.

It has been stated that albuminuria may often be due to laked blood cells and not true albumin.

I wonder whether in Dr. Rosen's case the convulsion on the second day after spinal puncture could have been one of the unusual spinal puncture reactions.

If emotion can cause paroxysmal hemoglobinuria, then there should be a greater incidence of it after the past two or three years. However, it is of some satisfaction to know that this disease is not fatal.

Dr. D. C. Smith, University, Va.—There was admitted in the Clinic of the University Hospital in 1928 a patient with paroxysmal hemoglobinuria. This case was reported by Dr. Oscar Swineford in the *Journal of Laboratory and Clinical Medicine* in January, 1931.

This was a white man, age 30, with all the characteristic clinical and laboratory findings of this unusual condition. It was suggested by Dr. Swineford that this condition in an undetectable degree might be partially responsible for the anemia associated with syphilis.

Examination of about fifty specimens of blood from different stages of syphilis with the Donath-Landsteiner test were all negative for the autohemolysin.

Dr. Fred D. Weidman, Philadelphia, Pa.—Have any morbid anatomical changes been described in the kidney, particularly of the glomerular tuft, in syphilitic cases of paroxysmal hemoglobinuria? Or, has the blood chemistry ever been such as to point to a glomerular nephritis in the case? Knowing what we do of the interrelationship of the kidney and the nervous system and the effect of cold in predisposing to an acute nephritis, one can wonder whether cold may be the last straw which led to special glomerular changes (short of an actual acute hemorrhagic nephritis) in an individual who already had a syphilitic kidney.

UROLOGIC CLINIC*

Conducted by NELSE F. OCKERBLAD, M.D., Kansas City, Mo.

Cases:

(1) CARCINOMA OF THE BLADDER. Raymond R. Callaway, M.D., Birmingham, Ala.

(2) IMPACTED URETERAL CALCULUS. Courtney W. Shropshire, M.D., F.A.C.S., Birmingham, Ala.

(3) FIBROSARCOMA OF THE PROSTATIC AREA AND PERINEUM. Walter F. Scott, M.D., and Jarratt P. Robinson, M.D., Birmingham, Ala.

(1) CARCINOMA OF THE BLADDER. CASE OF DR. CALLAWAY

W. E. M., a white man, aged 39, complained of hematuria of one year's duration.

He has had the usual childhood diseases. There was no family history of tuberculosis or cancer.

Section Clinic, Section on Urology, Southern Medical Association, Twenty-Sixth Annual Meeting, Birmingham, Alabama, November 15-18, 1932.

One year previously, the patient noticed a few drops of blood in his urine, at which time he went to a physician and received a few bladder irrigations. The bleeding stopped in about three days of treatment. The patient was free from symptoms for about three months, when the above symptoms recurred and treatment again stopped the bleeding. This continued about every three months until I saw the patient the first of May, 1932, at which time he was cystoscoped.

A number 24 Brown-Berger scope passed without difficulty. The interior of the bladder was examined and showed a tumor mass about the size of an English walnut, situated about an inch below the right ureteral orifice. The tumor appeared to be malignant, because it had broken down and was necrotic. No other tumor was found. The rest of the bladder appeared to be normal.

The patient was advised to have an operation for the removal of this tumor. The operation was performed on May 18, 1932. When the bladder was opened the tumor was found to be situated close to the right ureteral orifice and it was deemed inadvisable to do a resection because the tumor had a small pedicle and it was thought that it could be removed *in toto* and the base cauterized. It was removed with the McCarthy unit. The base and an area of normal tissue for about one-half inch were fulgurated. A No. 32 pezzar catheter was placed in the bladder and it was closed in the usual manner.

Laboratory Findings.—The specific gravity of the urine was 1.018. Tests for albumin and sugar were negative.

Hemoglobin was 87 per cent. There were 5,250,000 red blood cells and 8,300 white blood cells. The color index was 0.9.

Nonprotein nitrogen in the blood was 24 mg. per 100 c. c. Total phenolsulphonphthalein output was 72 per cent.

The microscopic examination of the tissue removed showed it to be a papillary carcinoma.

The patient made an uneventful recovery and was discharged from the hospital in three weeks, with the wound closed.

Subsequent Observation.—Three months from the date of operation the patient was again cystoscoped and at this time there was a recurrence, but not at the site of operation. There was a small tumor about the size of the end of one's little finger about three-quarters of an inch above the right ureteral orifice. No other tumor masses were seen. The second tumor was fulgurated through the cystoscope. Two weeks later another examination was performed and at this time there were two other recurrences just above the above mentioned one; also there was a recurrence at the line of incision. Both tumor masses were fulgurated at this time. Since that time the patient has had other cystoscopic examinations and there has been no other recurrence, but all of the tumor has not been cured as yet. It will need further treatment. The patient has not lost any weight nor have there been any symptoms of metastasis. He has passed blood in his urine at intervals, but there are no symptoms of cystitis. He has to get up from one to three times at night.

DISCUSSION BY DR. OCKERBLAD

There are always some new angles from which the problem of carcinoma or papilloma of the bladder may be viewed. I am sure that I will not be challenged when I say that there is at the present time no concerted plan of attack upon this disorder, which constitutes approximately 4 per cent of the surgical cases of the urologist. For the urologist the diagnosis is simple and easy. He has only to view the interior of the bladder with a cystoscope. The diagnosis being made, the next problem that confronts us is the treatment, for the etiology of these tumors does not wholly line up with what we know of new growths in other sections of the body. The classification is at present so complicated that I shall not attempt to simplify it for you, for that would only add confusion. It suffices to say that we have a simple classification based upon the histological structure of these tumors. The grading of tumors according to their malignancy, based upon certain cellular changes, is a fairly accurate method of prophesying the outcome. The experienced urologist can grade them almost as accurately by viewing them *in situ* with his cystoscope as can the pathologist, for the urologist has the advantage of knowing not only the probable age of the tumor, but also the complete history of the case, together with an estimate of the individual characteristics of the patient. It sometimes happens that the urologist is also a good cellular pathologist, which gives him an added advantage. The dogmatic way in which certain writers stress the idea that tumors of the bladder always remain true to the form in which they are originally found, that is to say, that a Grade I tumor never changes to a Grade IV, or, in other words, once you begin with a certain cellular structure, it does not alter its form or malignancy to one of higher grade, is somewhat disconcerting in the face of facts. Nothing could be more misleading. Every one of you has observed that a papilloma on a small stalk or pedicle with a small base, if removed, often returns as an infiltrating type of tumor. I have at least 2 cases in which the gross appearance of the tumor was changed in its return and also the grade of the tumor changed from Grade I to Grade III. In the case just presented, Dr. Callaway stated that because of the proximity of the tumor to the ureteral orifice it was thought unwise to dissect its base widely. I am sure that most of us have long ago given up trying to preserve the ureteral orifice if it gets in the way of a wide and adequate resection of a malignant or a potentially malignant tumor. The cutting across of the intramural portion of the ureter with a cautery blade may indeed result in a stricture at the vesical end of the ureter and the end-result may

be a damaged or perhaps a totally destroyed kidney. One must consider, however, in the interests of the preservation of life, that this wide resection with possible injury to the kidney or ureter is the lesser of the evils which confront us, and on our boldness may hang the life of our patient. The recurrences which may appear in the bladder are, in my experience, much more difficult to deal with and much less amenable to treatment of any sort. This patient is among the younger group, and you will all agree that the younger the individual, the greater the malignancy, although I am not unmindful of certain notable exceptions. Ira Sisk's case of spontaneous expulsion of a papilloma in a youth of twenty-one, whom he followed for a long time without observing recurrence, is worth remembering in this connection. The prognosis in the patient presented by Dr. Callaway is distinctly unfavorable. One would, of course, be tempted to try a Coffey transplant. The trouble is that in the early course of the disease the patient will not submit to the procedure, and in cases where it is a last resort, the patient is in such poor condition that the surgeon performs a hopeless operation upon a patient who has lost hope. X-ray and radium do not offer much in recurrent cases. When one considers the Coffey transplant, one must be sure by all means available that there are no metastases to distant points, for it is a cruel disappointment to do successfully an operation of this magnitude only to find that there is present, for example, metastasis to the lungs.

Turning from the dark picture for a moment, let me remind you seriously that bladder tumors, if taken early, offer more hope of a cure than most tumors in other organs of the body. The pathologist frequently reports them histologically benign, and we are not unmindful of the aphorism of Guyon: "We await in the clinic the papilloma of statistics." We believe with him that those that are not frankly malignant are potentially malignant. Because of this fact, the treatment by fulguration is often successful in the early cases. The doctrine of the early recognition of bladder tumors is one that should be preached continually. The case under discussion illustrates another important point. There was a painless hematuria one year before the patient was seen by Dr. Callaway. The question immediately arises from this observation, how old must a tumor be before hemorrhage from it takes place. The answer is generally that no one knows, but it is true that most of them have their first hemorrhage while the tumors are yet very small, and this is particularly true of those tumors with long fronds or papillae, as these are apt to be injured and the artery in the core is traumatized and then, of course, bleeding ensues. On the other hand, I have seen two cases which were inoperable and which gave a history of never having had hematuria until one week before the time I saw the patient. When I saw the tumors in each of these cases, I could scarcely believe the history that the patient gave me; but I could elicit no history at all of hematuria earlier than one week before I saw the patient in each case.

Generally speaking, these tumors are slow to metastasize. I have followed many bladder tumor cases to autopsy and have been surprised to find in repeated instances that the tumor was entirely confined to the bladder and that the patient died from a combination of hemorrhage, toxic by-products from the tumor, and infection, the latter largely the result of obstruction of the ureter by the new growth. In the light of these facts, our plea is for yet earlier recognition of bladder tumors. In my own practice I am seeing them earlier. A practitioner sent me two very early cases within six months' time, each during his first hematuria, and I feel confident that each is cured.

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(2) IMPACTED URETERAL CALCULUS. CASE OF DR. SHROPSHIRE

I report the following case to stress the importance of early surgical removal of impacted calculus before the kidney and the ureter become damaged or impaired:

Mrs. R. I. was 29 years old. Her husband was living and well; two children were living and well; she had had normal labors, with no miscarriages.

Menstruation began at the age of 13. The periods were regular, interval 28 days, duration 4 to 5 days, pain slight, and amount of flow normal.

Her family history was negative. She had had no previous diseases, injuries, or operations.

Her chief complaint was of severe pain in the left renal region, radiating down the course of the left ureter to the bladder.

The duration of this illness was one day.

On July 30, 1932, the day before I saw her, the patient began to have severe pain in her left side over the kidney region, which radiated downward and forward to the external genitals. She was nauseated and vomiting; pain was relieved only with morphine. There was some urinary frequency, dysuria, but no hematuria. Her appetite and digestion were good, bowels regular, and she had always been in good health. This was the first attack of pain of this nature.

Physical examination showed that she was 5 feet 5½ inches high, her normal weight was 127 pounds. She had not lost weight.

She was a well nourished white woman apparently in great pain, nauseated and vomiting.

No defect was observed in her eyes, ears, nose or throat. Her teeth were negative. The thyroid was not enlarged. The lungs were clear, expansion free and equal, there was no cough, nor shortness of breath.

The heart was not enlarged. There were no murmurs and the sounds were regular.

The abdomen showed no scars and no abnormal masses. There was tenderness in the left lumbar region and over the left kidney. The liver and spleen were not palpable.

Reflexes were normal. There was no adenopathy.

Blood examination July 30 showed hemoglobin 88 per cent, erythrocytes 4,400,000, leucocytes 14,300, lymphocytes 20 per cent, neutrophils 80 per cent.

Cystoscopic examination the same day demonstrated a bladder capacity of 200 c. c., urine clear, mucosa negative, trigone slightly congested, bladder negative for calculi and neoplasm.

The left ureteral os was swollen and congested. The right ureteral os was normal in appearance.

In the left ureter numbers 6-5-4 x-ray catheter and 3 x-ray filiform met with definite obstruction at the ureteropelvic junction. I was unable to pass the obstruction by gentle manipulation. No indigo carmine appeared from the left ureteral catheter in forty-five minutes.

In the right ureter a No. 6 x-ray catheter passed to the pelvis without obstruction. Indigo carmine appeared in 3 minutes from the right ureteral catheter.

X-ray examination July 30 showed a crescent-shaped calculus 1 cm. in width in the left ureter, just below the lateral process of the third lumbar vertebra.

Urinalysis.—On the right, July 30, 1932, the specific gravity color was blue, 1.030, reaction alkaline, albumin negative, sugar negative, acetone negative, red blood cells 200 to a low power field, and there were no pus cells. From the left side, the urine was colorless, specific gravity 1.002, reaction acid, albumin 0.002 per cent, sugar negative, acetone negative, red blood cells negative, pus cells negative, and amorphous urates were present. The bladder urine was light amber in color, specific gravity 1.020, reaction acid, albumin 0.005 per cent, sugar negative, acetone trace, red blood cells negative, pus cells 7 to a low power field.

The patient was returned to her room in the hospital nauseated, vomiting and suffering with severe pain in her left side. Five hundred c. c. of 10 per cent glucose in double distilled sterile water were given intravenously. Proctoclysis of 5 per cent glucose and soda was started and pain controlled with pantapon. She reacted nicely to treatment.

For the previous 24 hours the patient had suffered with severe pain in the left renal region. Pain was controlled with pantapon and the nausea and vomiting were relieved.

Cystoscopic examination next day (July 31, 1932) gave practically the same results as before. It was impossible to pass a filiform or x-ray catheter past the obstruction at the ureteropelvic junction of the left ureter. No indigo carmine appeared from the left ureter in 30 minutes. Indigo carmine appeared in the normal time, 3 minutes, from the right side. X-ray examination showed the calculus in the same position.

Blood examination July 31 showed: leucocytes 15,000, lymphocytes 10 per cent, neutrophils 90 per cent. Since the x-ray and cystoscopic examination of the impacted calculus at the ureteropelvic junction showed no improvement of its position, and the patient continually suffered severe pain, morphine being necessary to control it, and since there was an increase in the leucocyte count, we decided upon an immediate pyelotomy.

Left pyelotomy was performed under ethylene anesthesia. A posterior oblique incision was made, the site of the calculus was exposed and incised. A considerable amount of urine escaped from the pelvis of the kidney when it was opened and the calculus removed. The incision of the pelvis was not sutured. A cigarette drain was inserted down to the incision in the pelvis. The wound was closed with No. 1 chromic catgut and interrupted silk worm sutures.

The immediate postoperative condition was good. The patient was returned to her room and a proctoclysis of glucose and 5 per cent soda was given, with pantapon grain 1/3 to control pain.

August 1, 1932, the patient was fairly comfortable. Her temperature was 100°, pulse 94, respirations were 20. The wound was draining freely. The dressings were changed. Her condition was satisfactory.

August 3, 1932, she had a slight chill during the previous night. Her temperature was 102.3°, pulse 98, and respirations were 20. The wound was draining freely, necessitating frequent change of dressings.

On August 5, she had a slight chill. Her temperature was 102.4°, pulse 106, and respirations were 22. The wound was draining, the dressing was changed, and Dakin's solution was instilled in the wound. She voided freely. Her condition was satisfactory.

August 7, her condition was improving, the wound was healing, and the amount of drainage had decreased. The cigarette drain was removed and two small Dakin tubes were inserted into the wound. Dakin's solution was instilled into the wound. The pulse, temperature and respirations were normal.

August 9, there was slight drainage from the wound, which was healing. The dressings were changed, Dakin's solution was instilled, and all but three sutures were removed.

August 11, there was slight drainage from the Dakin tubes. Dakin's solution was instilled into the wound. The remaining sutures were removed.

August 13, the condition was satisfactory, the wound practically healed. Dakin's solution was instilled into the wound.

August 14, the entire wound was healed except the lower angle, in which a small Dakin tube remained. Dakin's solution was instilled. The patient was allowed to go home in care of her family physician, to report to the clinic in three or four weeks.

September 7, upon examination at the clinic, her condition was most satisfactory. The wound healed with a firm scar.

November 2, 1932, on cystoscopic examination, a No. 6 x-ray catheter passed to the pelves of both kidneys without obstruction. Indigo carmine appeared from both ureteral catheters in 3.5 minutes. Urinalysis of right and left kidney specimens was negative. X-ray examination of the kidneys, ureters and bladder was negative for calculi. The wound healed with a firm scar. There was no hernia, no pain, and complete recovery.

DISCUSSION BY DR. OCKERBLAD

Dr. Shropshire has presented a case which is of interest, not because of its rarity, but because of the frequency with which such cases are presented to the urologist. When confronted with a condition of this character, one has before him two courses of procedure, each of which may be right in certain instances. The first course may be toward conservatism or a non-surgical policy. This may consist of giving the patient appropriate medication, keeping him in bed and waiting for the stone to pass; or a more active type of conservatism, using ureter catheters or bougies of various types to dilate the ureter to cause the stone to become engaged in the ureter and so start downward.

The second course is a resort to surgery. Either of these is proper in its place. Both may be resorted to in a given case. The surgeon must exercise good judgment, for sometimes to be conservative when he ought to use surgery at once is very bad. In this case the stone undoubtedly formed rather quietly in the tip of a minor calyx, and there, when a little too large and rough to pass readily down the ureter, it suddenly shook loose from its moorings, so to speak, and became impacted at the ureteropelvic junction.

The question immediately arises, will an impacted stone remain impacted? One may elect to wait to see whether it will loosen and start down the ureter, which is the conservative course. In some instances the patient refuses operation, and then a conservative program is forced upon us. The outcome in such a case sometimes surprises us. Such a case fell to my lot not long ago. A young man had been operated upon for a ureteral stone on the left side and then came to me with two more fairly large stones in his right kidney pelvis. The memory of the rather recent uretero-lithotomy was quite fresh in his mind and he did not take kindly to the suggestion that an operation would be necessary. He eventually passed both stones, although it took him almost a year to do so. How much damage may be done to a kidney under such circumstances is not definitely known, but we know from animal experimentation and clinical observation that it is sometimes quite considerable.

Dourmashkin has pointed out that grooves form about all ureteral stones which permit the passage of the urine around them and this saves the kidney from the ravages of back pressure. Conservatism is well enough up to a certain point. It is to be remembered that one-half to two-thirds of all impacted stones in the ureter have their site of impaction in the lower third of the ureter and, as every surgeon knows, this is the most difficult and unfavorable area upon which to operate. By all odds, the easiest and most favorable area to operate is the upper third of the ureter.

A rather recent case is still fresh in my mind as illustrating the difficulties one may get into and out of through no particular exercise of skill. A man of 55 years was sent in by his physician with the diagnosis of kidney stones. He had, we discovered, one small stone in his right kidney pelvis and two stones in the left kidney, one of which was impacted at the ureteropelvic junction. Pain, chills and fever were his lot. We operated upon the impacted stone, and at operation found a rather small, black, rough stone so firmly imbedded in the ureteral structure that in freeing it the ureter was torn to ribbons. We stitched this rent rather carefully, and at the time my resident remarked that he doubted that the ureter would ever function again. The search for the smaller stone continued with the aid of the x-ray department, but without success. A few days later, the stone for which we had searched so long came out on the dressings through the wound, having evidently torn its way out through my careful stitching of the ureter. The urine drained out of the sinus for seven weeks, but finally it closed. He passed the stone on the opposite side ten weeks after the operation. There is no evidence of a stricture at the site of impaction.

It sometimes happens that a stone is impacted in the ureteropelvic junction as in Dr. Shropshire's case. The patient has no inkling of its presence because it does not cause pain, and only because of more than a year of pyuria is the patient sent in for diagnosis. The result in such a case is a seriously damaged kidney with a permanent hydronephrosis.

There is a feature of Dr. Shropshire's case that is somewhat difficult to understand and that is that the left ureteral os was markedly congested and swollen. This occurs with regularity in the case of a stone impacted in the lower one-third of the ureter, and always when the stone is passing through the intramural portion of the ureter. I have but rarely observed it when a stone is impacted at the ureteropelvic junction. One would suspect, when the edema and inflammatory reaction occur about the ureteral os from a stone impacted at the ureteropelvic junction, that there has been a considerable amount of infection with occasional leakage of small amounts of the infected urine.

In the case presented by Dr. Shropshire, we are confronted again with the necessity of acting with promptness. As soon as Dr. Shropshire found that he could not pass any type of ureteral instrument past the stone, which was so tightly impacted in the ureteropelvic junction that noth-

ing could get around it, he acted promptly, cut down upon the kidney and removed the stone. Had he waited a few days, the patient would undoubtedly have had a serious time, with fever, chills, and possibly a loss of the kidney because of multiple abscesses throughout its substance, and a further possibility, if the trouble continued, of a perinephritic abscess.

The impairment to the kidney is not always evident in the case of impacted stone. Sometimes there is a permanent hydronephrosis, but more often the damage is more insidious, producing interstitial fibrosis, which in turn causes a progressive type of damage.

We do not yet know all the facts and factors regarding stone formation, but we are sufficiently aware of the role played by some of them so that we can do much to prevent the recurrence of stone in a given individual. A concentrated urine is a known factor, hence, the stone-forming individual must keep the urine well diluted. Obstruction is a known factor, therefore the drainage from the kidney must be adequate. Focal infection is a known factor, therefore it is imperative that all known focal infections be dealt with. A dietary inadequacy as well as dietary indiscretions are thought to be a factor, so that a good balanced diet with ample vitamin content is essential. Whether geographic location has anything to do with the condition is debatable. The giving of distilled water and glycerin is, I believe, not based upon accurate consideration of body chemistry.

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(3) FIBROSARCOMA OF THE PROSTATIC AREA AND PERINEUM.* CASE OF DRS. SCOTT AND ROBINSON

Sarcoma of the prostate proper is exceedingly rare. Sarcoma arising in the retrovesical connective tissue and involving the prostate, while not so uncommon, is seldom encountered. Stafford[1] reported the first case of sarcoma of the prostate in 1839; less than 100 authentic cases have been reported to date. In 1926, Smith and Torgerson,[2] in a review of the literature, collected 83 unquestionable cases and added one case of their own. In this series there were two cases of fibrosarcoma and in only three instances did the tumor present in the perineum. Therefore, we feel that a fibrosarcoma involving the prostatic area and perineum is worth reporting.

Often it is impossible to determine the site of origin of the tumor, as was true in this case. Most authorities feel that true sarcoma of the prostate does occur, but that the majority of cases develop from the retrovesical connective tissue and invade the prostate. It is the opinion of Eisendrath and Rolnick[3] that if the condition is advanced the origin cannot be determined, as the rate of growth and mode of development of both true prostatic sarcomata and sarcomata of retrovesical origin are quite similar. Young[4] states that pathological studies should be confined to those cases where the tumor is sufficiently circumscribed so that there can be no doubt of its prostatic origin.

The rate of growth of sarcoma of this area is at times very rapid. In a few months the tumor may reach the size of a child's head and in the final stage it may occupy the entire pelvis, compressing the bladder, ureters, urethra, and rectum. The growth is usually retrovesical, but prevesical masses are described; the perineum may be invaded until it bulges and resembles a peri-urethral abscess.

Many varieties of sarcoma of the prostate have been recognized and described in the literature. The most common are round cell and spindle cell, while angiosarcoma, chondrosarcoma, lymphosarcoma, mixed-cell sarcoma, myosarcoma, myxosarcoma, rhabdomyosarcoma, and fibrosarcoma are at times seen.

Sarcoma of the prostate may occur in any decade of life. Statistics show one-third to occur in the first decade of life and the majority before the cancer period. The prognosis is necessarily bad.

The patient, Z. P., a colored man, age 34, was admitted to the Urological Service of the Hillman Hospital December 2, 1931.

Gonorrhea and syphilis were denied and the history was negative for ulcerations of the external genitalia and trauma to the rectum or perineum. There had been no change in weight during the previous few years and the family history was negative for cancer and tuberculosis.

Three and one-half months before admission to the hospital pain was noted in the region of the perineum and anus. Three weeks from the onset of the pain a slightly tender mass could be made out in the perineum. The mass increased in size until it displaced the rectum backwards and caused the perineum to bulge outwards. There was a constant sensation as if the rectum were filled with fecal material and purgatives are required to move the bowels. Voiding has at times been difficult, the stream being small and straining required to start it, and during the past few weeks there has been a slight dysuria, but no hematuria. The patient voids every two hours during the day and two or three times at night. The temperature on admission was 101° and the history was negative for chills and fever.

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*From the Urological Service of Hillman Hospital, Birmingham, Alabama.

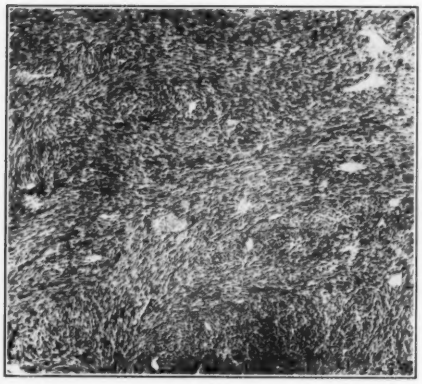

Fig. 1
Microphotograph X 75.

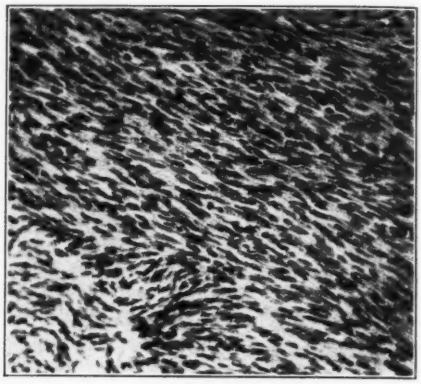

Fig. 2
Two mitotic figures can be seen, a monaster just above and a diaster just below the center of the field. Microphotograph X 320.

Examination revealed a bulging perineum and the anus displaced posteriorly. The mass had a doughy feel, there seemed to be a deep fluctuation present and palpation was painful. A number 22 F sound was passed easily to the bladder and examination with it in place revealed the membranous urethra to be involved in the mass. The penis and scrotum were essentially negative. Digitorectal examination revealed the rectum displaced posteriorly against the coccyx and as high as the examining finger could reach the pelvis was filled with a mass that was smooth, soft, and gave to pressure, but did not pit. The area of the prostate was involved in this mass and it was impossible to palpate the gland proper or the seminal vesicles. The examination caused moderate pain. Catheterization revealed an empty bladder and a urethra negative for stricture.

Urinalysis December 2, 1931, showed a cloudy amber specimen, specific gravity 1.024, acid reaction, a faint trace of albumin, no sugar, casts or red blood cells. There were 10 to 12 leucocytes to a high power field.

The blood count was as follows: hemoglobin 66 per cent, red cells 3,710,000, color index 0.8, leucocytes 9,250, lymphocytes 13 per cent, large mononuclears 2 per cent, neutrophils 83 per cent, eosinophils 2 per cent.

With a temperature of 101° and a history of difficulty in voiding, with moderate frequency and dysuria plus the above physical findings, a diagnosis of abscess was made.

A mid-line incision was made in the perineum and greatly to our surprise pus was not encountered, but a very friable growth that bled profusely. It was evident that we were probably dealing with a sarcoma of the prostate of retrovesical origin. The growth was found to extend beyond the seminal vesical region and laterally to each side of the pelvis. No attempt was made to remove the entire growth, but only such of it as was obstructing the rectum and urethra. The cavity was packed with gauze to control the hemorrhage and the incision closed with silkworm sutures. The postoperative recovery was rapid.

The lungs, abdomen and all bones were x-rayed for metastases as soon as the patient's condition would permit. They were reported negative. Deep x-ray therapy was started by the x-ray department. At the end of four weeks the incision was healed and the bulging of the perineum had disappeared. Four weeks following the first x-ray treatment the patient returned for a second series. At this time there was no evidence of sarcoma in the perineum; the prostate was about three times normal size and had the typical feel of a sarcoma. The patient was in good physical condition and believed himself to be well. We have been unable to locate him since that time.

Pathological Report by Dr. Geo. S. Graham.—Tissue No. S-31-1069.

Gross Description.—The specimen consists of a large number of fragments of soft pinkish white fibrillar tissue, markedly friable. It is rather vascular. The masses weigh from two to three grams to 25 or 30 grams. In some of the masses there are occasional narrow opaque yellow lines extending through the substance. Rarely there is a fragment of yellow calcareous material sometimes as big as a pinhead.

Microscopic Description.—Sections show a tumor made up of spindle cells arranged in solid columns. There is little supporting tissue and the blood vessels are widely spaced, thin walled and engorged with blood.

The tumor cells are for the most part well differentiated. The nuclei are large and vesicular, ovoid in shape with prominent reticular network. The cytoplasm is relatively abundant.

There are other areas where the cells are smaller with relatively large nuclei and in these areas mitosis is frequent. The tumor appears in a good state of preservation in the blocks sectioned, but there are small areas where the cells are undergoing degeneration.

The microscopic diagnosis is fibrosarcoma.

Conclusions.—Sarcoma of the prostate is very uncommon and in this instance the condition was mistaken for a large peri-urethral abscess, because we placed more importance on the physical findings than on the history. The condition was so advanced that we could not determine

the true site of origin of the tumor. Treatment with deep x-ray was very satisfactory during the brief time the patient was under observation.

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DISCUSSION BY DR. OCKERBLAD

The case which Dr. Scott has just presented for us, contrasted with that which Dr. Shropshire presented, is a very rare occurrence. Sir Henry Thompson's classical treatise, "Enlargement of the Prostate," which was published in 1858, cites 24 cases of what he calls carcinoma of the prostate, grouped under the general heading of malignant disease of the prostate. I was very much interested to note that there were 6 cases in children below eight years of age which he described as encephaloid. These were beyond question sarcoma of the prostate as I know the disease. Included in those of more advanced years there were 7 cases, one 41 years of age, the rest of them above 60 years of age, which were classified as encephaloid. Now, of course, we know that the encephaloid means simply a brain-like tumor, very cellular with a very light stroma. I am quite sure that you will all agree that some of these may have been a papillary type of carcinoma of the prostate, or encephaloid type of carcinoma of the prostate, but in all probability a number of them were true sarcomas of the prostate. There have been a number of reviews of the literature attached to isolated cases which have been published from time to time on this very important subject so that the total at the present time includes some 75 or 85 cases of sarcoma of the prostate. This does not, I believe, include the cases cited by Sir Henry Thompson. Even though 85 cases have been reported, it is still a very rare occurrence.

About two-thirds of the cases which have been reported are under fifty years of age. The rest of them are the ones in which we should be particularly interested because they simulate sometimes very closely the benign enlargement of the prostate. I have had one such case.

The patient was a man 71 years of age who had a urinary obstruction. On palpation of the prostate gland by rectum a very much enlarged gland was felt which had all the characteristics of a benign enlargement. There was some 500 c. c. of residual urine with all symptoms in line for hypertrophied prostate. During his preparatory stage on an indwelling catheter the patient suddenly developed a very severe hemorrhage from the stomach and before anything could be done about it he had bled to death. The autopsy showed that this was a sarcoma of the prostate with metastases everywhere but particularly to the stomach, with the erosion of a very large blood vessel which caused his death.

Diagnosis of sarcoma of the prostate is most frequently made in children. A boy of two or three years of age, or even ten or twelve years of age with a very large tumor in the area of the prostate in which an inflammatory type of disorder may be ruled out, certainly should be considered to have a sarcoma. One never likes to cut into these tumors. Of course, one never does if the diagnosis can be made in advance. Radium causes an immediate disappearance, but of course does not preclude the possibility of a recurrence or of metastasis going on to the destruction of the patient.

Dr. Scott's patient was within the age which we ordinarily consider the prostatic age. The external manifestation of this growth is interesting indeed. Its characteristic response to radium treatment is perfectly in line with this type of growth. The outlook, however, is very dark. I am quite sure that there are none of these sarcomas of the prostate living after five years. I shall be very much interested in the outcome of Drs. Scott and Robinson's case.

ROENTGENOLOGIC FINDINGS IN METASTATIC STAPHYLOCOCCAL INFECFECTIONS OF THE KIDNEY AND PERINEPHRIUM*

By C. H. Heacock, M.D.,
Memphis, Tenn.

Interest in lesions produced by micro-organisms that enter the circulation and manifest themselves in remote organs has been shown for many years. The streptococcus is usually thought of as the infective agent and the mouth and nasopharynx are thought of as the sources, or foci of infection. While Billings[2] believed that staphylococci may be offenders in the same way as streptococci, probably Phemister[9] was the first to regard the skin as the focus through which this organism may gain entrance into the blood stream. In 1922, he reported 19 instances of staphylococcal infections in remote organs following infections of the skin. Two of these cases were carbuncles of the kidney and

*Chairman's Address, Section on Radiology, Southern Medical Association, Twenty-Seventh Annual Meeting, Richmond, Virginia, November 14-17, 1933.

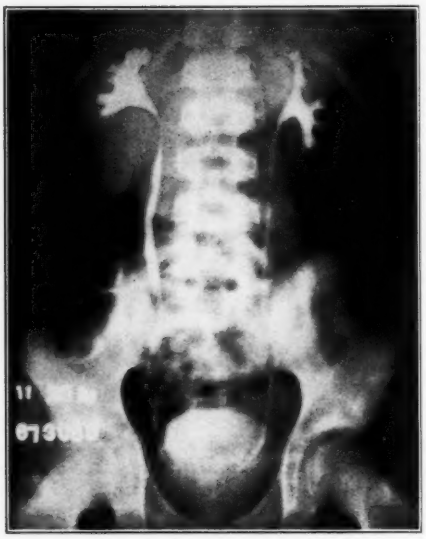

Fig. 1

Lower major calyx displaced upward and ureter compressed and displaced toward midline by a carbuncle of the lower pole of the right kidney.

3 were perinephric abscesses. It is noteworthy that in this series the kidneys and perinephrium were affected more often than any other structure except the bones.

The kidney and perinephrium have much in common: the latter surrounds the former; they both receive blood from the renal artery; and each has end-arteries. After studying the anatomy of the perinephrium, Vermotten[10] is convinced that acute suppurative perinephritis (perinephric abscess) is a definite disease entity secondary to bacterial emboli. This condition must be distinguished from extension of infection into the perirenal tissues from a pyonephrosis (perirenal abscess). These two differ not only as to the source of the infection and the type of organism present, but in their symptoms, the methods of treatment, and the prognosis.

Metastatic staphylococcal infection of the kidney and perinephrium may occur as a result of a generalized pyemia with accompanying focal abscesses in other organs. However, these cases are rapidly fatal and the roentgenologist is not called upon to make an examination.

It is the purpose of this paper to consider the localized areas of renal infection that appear several days or weeks after a furuncle or similar infection of the skin. These are abscesses and carbuncles. These two lesions differ, much as furuncles differ from carbuncles in the skin. The former are simple and the latter conglomerate. Moore[7] defines carbuncle of the kidney as a metastatic, circumscribed, conglomerate suppurative process usually caused by the *Staphylococcus aureus*. In either instance, the lesion is usually single, occurs in the cortex, tends to spread toward the periphery, and only exceptionally involves the renal pelvis. Usually there is no pyuria.

O'Connor[8] has recently reviewed the literature on renal carbuncles. He was able to collect 92 reported cases and add 2 more proven cases that were diagnosed before operation. Campbell[5] has described the pathologic picture. He believes that the renal carbuncle, first described by Isaacs, results from the confluence of several abscesses rather than infection of an extensive infarct. Upon reaching the capsule, renal carbuncles frequently give rise to perinephritic abscesses. In 94 cases on record, there was an associated perinephritic abscess in 44. In that event the abscess will be a secondary one, even though the invading organism is the staphylococcus. The recognition of this fact may be difficult even for the surgeon. It is important, however, as a simple drainage, which is sufficient for the primary abscess, will be inadequate if a carbuncle is present.

Fig. 2

Perinephric abscess. No scoliosis of the spine, but the outer border of the right psoas muscle is obscured. Lower calyces tipped up and displaced outward.

Examination for renal infection is perhaps most frequently carried out because of pyuria. In cases of carbuncle and perinephric abscess, pyuria is the exception rather than the rule. Constitutional symptoms are usually out of all proportion to the amount of tissue actually involved. Enough pain and tenderness in the renal area is present to direct attention to the kidney. It is important not to wait too long before determining the true nature of the disease. While thus waiting, a perinephric abscess may burst its bounds or a carbuncle may become a massive pyonephrosis and terminate in fatal sepsis.

No attention appears to have been given to the roentgenologic findings in renal carbuncles except by the urologists themselves. Beer[1] and Lipsett,[5] in the same issue of the same journal, independently called attention to the same two roentgen ray signs of perinephritic abscess. The first of these is a curving of the spine away from the affected side. This postural scoliosis is to be ascribed to the irritation of the spinal muscles near the abscess. The other sign was an obscuration of the shadow of the outer border of the psoas muscle on the affected side. This finding presupposes good preparation and a clear definition of the psoas muscle of the opposite side. Not only is the contour of the psoas muscle obliterated, but the renal shadow is rendered indistinct or completely obscured. Fowler and Dorman[4] studied the presence and absence of these signs in 11 cases and observed them in 6 patients, or 54 per cent.

Another sign that I have noted in about half the cases of perinephric abscess has been a slight elevation of the diaphragm on the side of the abscess. While the diaphragm was not fixed, its excursion was limited to about half of that observed on the opposite side. This finding has been more constant when the abscess occurred on the left side. Another fluoroscopic sign mentioned by O'Connor[8] is the observance of a fluid wave in the abscess. When possible, fluoroscopy as well as radiography should be used in the study of these patients.

All four signs may be present in a psoas abscess or any suppurative process in the neighborhood of the kidney. However, they are important in distinguishing between a perinephric abscess and an intrarenal suppuration such as a carbuncle. It is between these two possibilities that the decision is most important and difficult.

In a localized, circumscribed focus of infection in the substance of the kidney, as an abscess or a carbuncle, the study of the renal outline is most important. In the roentgen examination there is no way of distinguishing between them, but neither can become very large without altering the renal outline. There is no obscuring of the renal shadows as in perinephric abscess and they can be clearly outlined providing there is proper preparation of the patient and a careful technic. Since the carbuncle tends to extend toward the periphery, the latter becomes bulged or raised and there is an asymmetrical enlargement.

As in O'Connor's[8] two cases, most of the carbuncles have been correctly diagnosed from the pyelogram in conjunction with the clinical history and physical findings. The salient points of the latter are: (1) a history of a previous staphylococcal infection, usually in the skin; (2) sudden onset with fever; (3) a septic type of temperature; (4) high leucocytosis; and (5) pain and tenderness in the renal area.

While the pelvis is rarely directly involved by an erosion, the nearest calyces become distorted by the pressure of the suppurative mass and its surrounding zone of infiltration. This distortion may take the form of cupping or saucer-like depressions; elongation of the major calyces; or elongation and narrowing of the major calyces. Displacement of one major calyx is almost always away from the periphery. If the lesion is in the lower pole and toward the hilum, the ureter may be displaced toward the mid-line. The pyelogram frequently suggests a neoplasm and has been so reported in some instances when the pyelographic evidence alone was considered. This error can easily be avoided if the clinical evidence is also taken into consideration.

In perinephric abscess, the cortex of the kidney acts as a buffer substance between the abscess and the renal pelvis. As a result a large part of the pelvis, rather than any one calyx, is displaced by the extrinsic pressure. Since the abscess is more frequently found around the lower pole of the kidney, it is the lower and middle major calyces that are displaced outward and upward. This displacement is not usually accompanied by any distortion of the individual calyces.

I have had no experience with intravenous pyelography in perinephritic abscess or renal carbuncles. The only reference to its use that I was able to find was by MacMyn.[6] His patient, with a carbuncle of the kidney, had a severe reaction following the injection of uroselectan. The results were not conclusive, but

there was no excretion from the affected kidney. However, I believe that intravenous urography is destined to become the most important single method of examination in differentiating a renal carbuncle from a perinephric abscess. In the former there will be impairment of function, while in the latter there will be normal excretion.

The indications for roentgenologic investigation are being extended in the urologic field and no longer is the absence of pus in the urine an indication that the examination will not be productive of valuable information.

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TREATMENT OF FRACTURES IN THE LOWER THIRD OF THE LEG*

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From an experience in a considerable number of lower leg fractures treated at the City and County Hospital and with a smaller group in private service we have had too many cases of faulty unions, delayed, and non-union. With these facts in mind, methods of treatment were reviewed in our cases and it is the purpose of this paper to indicate the routine we now follow in simple and compound fractures.

That the criticism of poor results applies to others as well as to our own service is well illustrated from a study of 100 patients referred to our private clinic because of unsatisfactory progress. This group typifies the misfortune which may come to those having leg fractures, and their histories revealed in many instances the background for prognosticating what interruption in recovery would eventually take place. Probably the best approach for consideration of a plan which may differ from the customary practice is to analyze some of these poor results. In the group of 100 cases there were 23 compound fractures, 20 incomplete reductions, 17 mal-unions, 23 with non-union, and 17 delayed unions.

The compound fractures were examined in most instances because of persistent infection, many with mal-position and some having delayed and non-unions. Cases with good alignment and fair contact closed earlier and had better consolidation. Not any of the series had early prolonged immobilization with Dakin's solution or by Orr's method. Three in this group with definite non-union (8 to 12 months) had several operative procedures during the first few months following the injury.

The 20 cases with incomplete reduction were early cases, but in some three to six weeks had elapsed since the date of injury, and in all one or more attempts at reduction had been made, generally by manipulation.

Final good recovery was obtained in all of this group, though delayed 5 or 6 months in some, due chiefly to circulatory damage.

The treatment employed on admission was skeletal traction in a few and open operation with removable internal fixation (Carrell-Girard method) in the greater number. In our experience this method of retention has been applied with less trauma and union was more rapid than in the traction cases begun after callus formation was well established.

The 17 mal-unions emphasize one thing only, inefficient early treatment. Some were inconsequential, but those with lateral and posterior deviation had disturbance in knee and ankle posture and needed correction. Some judgment is required in determining the proper time in relation to the healing process for opening a fracture of this character. It has seemed wise to expose the fragments before the ends become rounded with dense mature bone. In this state osteogenesis can be restored by clearing away all callus, opening the medullary canal and chipping up adjacent osteoperiosteal bone. In late cases it is safer to use extra bone removed from the same tibia as a sliding graft which can be wedged into the lower fragment at the bottom of the groove and attached above by one or two bone pegs.

*Read in Section on Railway Surgery, Southern Medical Association, Twenty-Sixth Annual Meeting, Birmingham, Alabama, November 15-18, 1932

Twenty-three patients with non-union and 17 with delayed union have so many factors in common that it is desirable to examine them together. Incomplete reduction was present in 80 per cent, long oblique spiral types in 10 per cent, transverse 20 per cent, slight oblique in 70 per cent. Inadequate fixation determined by the history of several changes in early treatment, and by types of appliance unsuited to accurate retention, was an apparent factor in many of these cases. Early removal of splints with unprotected weight-bearing was accountable in a considerable number. Many patients in the several groups complained of joint stiffness and swelling and other symptoms indicating circulatory damage.

Johnson has shown in experimental animals the nutrient vessel branching in the medullary canal to be of greatest value. Metaphyseal vessels which enter near the bone ends and anastomose with nutrient connections in the medulla are next in importance. Least efficient of all is the periosteal system coming from muscles and fascia spread over the periosteum and penetrat-

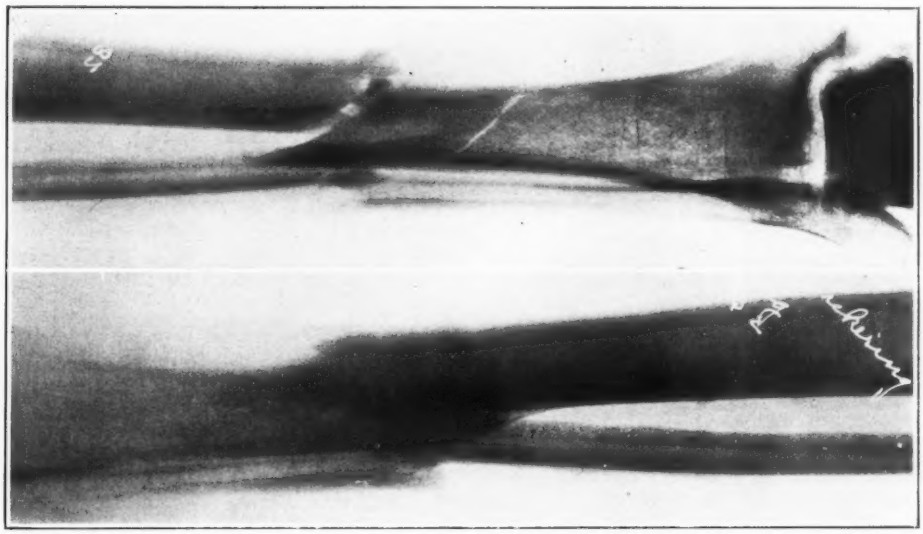

Fig. 1

(Top) C. P. Delayed union four months, after fracture, slight callus (arterial ischemia). (Bottom) C. P. Same three months later, treatment, walking plaster.

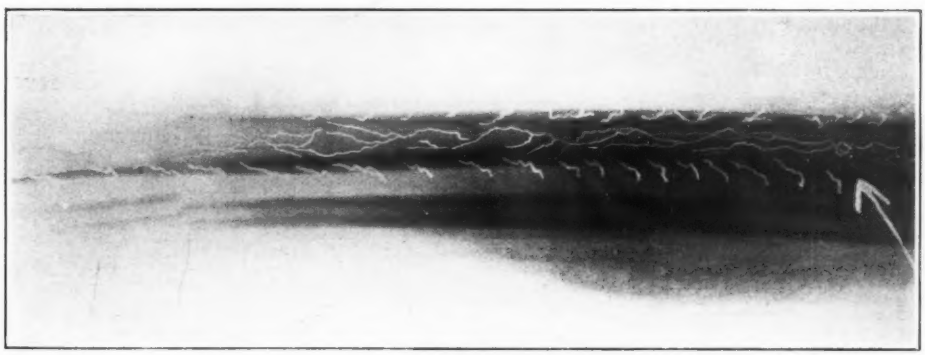

Fig. 2

Fresh specimen with nutrient vessel injected and traced for clearness with additions for completeness. Periosteal and metaphyseal indicated to illustrate complete blood supply of leg.

ing about one-half of the distance through the cortex of the bone. Formation of callus dependent on periosteal blood supply he found slow and uncertain.

Inference from these studies as related to fractures under discussion is that in the lower third nutrient arterioles are very small, and when interrupted in the lower fragment dependence rests with the metaphyseal and periosteal systems. The metaphyseal vessels are likewise much reduced at this distance from their source and even with anastomosis through the nutrient channels are incapable of supplying enough blood. The periosteal system, a weak ally at best, is handicapped in this particular location because muscles are becoming tendonous and the bone is not surrounded with a rich vascular muscle mass as in the upper third of the leg. Most of the vessels have sprung from divisions higher up on the periosteum and are reduced in size and probably in number at this lower third region.

Emphasis has been given to circulatory damage in the soft tissue, influencing bone union by the recent clinical observations of Mr. Girdlestone. Mr. Girdlestone describes from the record of his cases the picture of arterial ischemia from trauma to the fractured ends and is convinced that the ischemia is a primary factor in delayed callus. He argues, further, that the slow mechanism of return is due to dysfunction of the local sympathetic nervous system.

The treatment of non-union is surgical and methods of bone grafting will not be discussed.

Treatment of delayed union in the light of Mr. Girdlestone's contribution should receive a new impetus. One cannot read his case reports without recalling in his own experience not one but many identical syndromes: the man with a fracture probably in good position, three or four months old and no callus, a history of considerable circulatory damage at the time of the accident, vigorous manipulation and perhaps much pain during the first few days with the necessity for releasing the dressings. Add to this a history of complete absence of function during the two or three months of convalescence, which has been common with most of us, and the syndrome is complete. We must interpret this correctly else our treatment may do incalculable harm. Mr. Girdlestone admonished "patience," "continuous accurate immobilization without constriction," and the functional use of the limb.

Illustrating these principles and providing the details of treatment our experience with one patient in this series will be recounted. A healthy man of 35 years of age came in on crutches with the history of a simple fracture at the lower third, received 8 months previously. Motion was present at the fracture site in the tibia. Position was good and there was slight callus. Diagnosis of non-union was made and operation advised. He refused and in doing so displayed superior judgment, though his reasons were entirely remote. Close fitting walking plasters without padding were worn for 8 months with final complete consolidation in 12 months, making a total of 18 months from the day of the injury.

The lessons from an unfavorable progress in this group of cases with valuable contribution in the recent literature impresses one with the following fundamentals:

(1) Early reduction and gentle manipulation will reduce circulatory complications.

(2) Circulatory damage (arterial ischemia) is an important factor in delayed union.

(3) Accurate reduction promotes better circulation and shortens convalescence.

(4) Fixation must be adequate to control movements at the fracture site, and maintained until union is firm.

(5) Function properly protected must be ar-

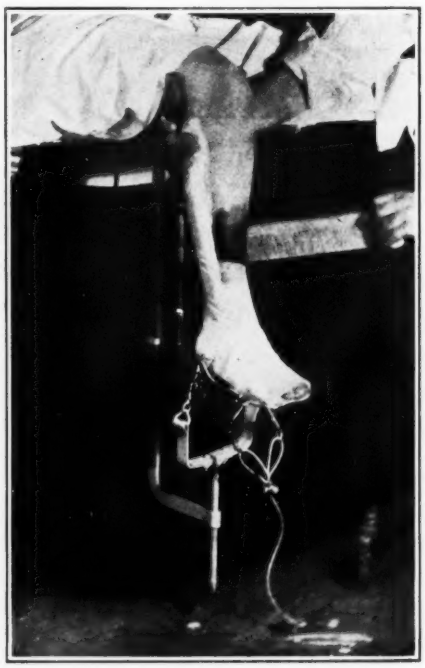

Fig. 3
Watson Jones reduction device in use with wire traction.

ranged for the limb and for the bone during convalescence.

In the effort to attain these objects we have used freely the methods and appliances of various authors. At the present time there seems to be an advantage in using one method for some types of fractures and a different plan for another group. It is not the purpose of this paper to insist that every one should follow the same technic, but in the application of sound principles apply the method best suited to his individual equipment.

Fig. 4
Elevation in bed followed in a few days or few weeks (depending on obliquity of fracture) by free walking.

Greenstick fractures and those without shifting of fragments are easily reduced and held in position by plaster dressing. Those with complete displacement, whether transverse, oblique or spiral, are frequently difficult to reduce. The Watson Jones tibial extension attachment is most valuable because traction is applied with the knee at right angle with better control of the fragments.

The patient on admission has roentgenograms in two positions and is immediately placed on a table with the leg hanging over the splint. Local preparation is made and 15 to 20 c. c. of 2 per cent novocain are introduced between the fragments. When anesthesia is complete gentle manipulation is made and if the fragments are not in as good position as may be anticipated from the roentgenograms, plaster is applied without padding following the careful technic of Böhler or Jones Should the fragments not reduce readily under local anesthesia, a Kirschner wire is introduced through the os calcis, supported by a spreader, and attached to the foot piece of the Jones device. Reduction and plaster application are then carried out following the technic of Jones with this exception. A piece of silence cloth, double thickness, is fitted to the anterior surface of the leg and

foot, and the posterior splint is applied in the regular way, but with edges slightly overlapping the silence cloth. This is bandaged in position and roentgenograms are made without change in traction. If one decides that the position will hold, plaster is completed, the wire removed and plaster extended to the upper thigh. Should one conclude that further traction for 10 days or 2 weeks is advisable, the plaster modification consists in cutting the bandage which holds the posterior splint and on the slight padding which has already been placed on the front area, an anterior plaster splint is applied and in turn bandaged in snug position, after which circular turns of plaster insure accurate fixation and permit traction without damaging the skin by friction.

We have been timorous about using plaster without padding for fear of adding to the circulatory embarrassment in the muscle tissue, but as we venture more the results have not confirmed our fear. Perhaps later we shall discard all padding, as is successfully done by Bohler and Jones.

In the cases for continued traction the leg is placed on a Braun or similar splint and the pull made through the Kirschner wire. At the end of 2 or 3 weeks the wire is removed and the plaster continued to the middle thigh.

We have not been quite as successful as the authors with their methods and still find it advisable to open some spiral fractures and fix the fragments in accurate position. We have used the Carrell-Girard removable devices in more than 50 cases with various fractures and have not yet had an infection or appreciable delay in union.

Compound fractures in most instances are carefully cleansed with the leg in the same position as described for simple fractures, more padding is used and the case treated as if it were not compounded. When there is more comminution and potential infection, a detail of procedure well described by Conwell has been very satisfactory. Likewise the Orr method has given in a few cases beautiful results. From experience with Anderson's splints in other fractures there is good reason to believe this will prove to be the best traction device for compound fractures in the leg and perhaps for badly comminuted simple fractures. With this splint applied the leg may be closed if one prefers the Orr method or if Dakin's solution is to be used the leg is not covered.

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DISCUSSION (*Abstract*)

Dr. Edward T. Newell, Chattanooga, Tenn.—The paper of Dr. Carrell shows that he is master of his subject, yet I cannot understand how there could have been 17 per cent of non-unions in the hospitals that he refers to. Our non-unions are less than 1 per cent.

Although I realize that there are cases of fractures in the lower third of the tibia that cannot be handled by any other method than by open operation, I am opposed as a rule to adopting any measure that may necessitate open operation until some closed method has failed, unless the case is one that frankly demands open operation from the nature of the fracture or the condition of the soft parts. I have had very little experience with Dr. Carrell's special technic in these cases.

We find that forty day chromic catgut doubled No. four will usually hold the fracture in apposition long enough for a moderate amount of union to develop, provided this is supplemented by appropriately applied plaster dressings. We prefer not to use any hardware if possible in bone surgery.

Dr. Carrell's paper, the radiograms and the films of the cases that he has treated by his present method bring one again to the old time conclusion that there are many different methods by which the same result can be accomplished.

Dr. W. K. West, Oklahoma City, Okla.—I wish to emphasize the points made by Dr. W. B. Carrell regarding the use of skeletal traction.

This type of assistance in treating fractures certainly has a definite place. The wire is easily and safely introduced. The pull is placed exactly where it is needed and upon removal the wound heals immediately and without trouble. The wires are very comfortable, much more so than skin traction.

As soon as skeletal wire traction equipment can be obtained at a more reasonable cost, all clinics doing fracture work will find a place for its use, especially in severe fractures of the long bones.

Dr. Carrell (closing).—I should like to make clear that the series of cases analyzed was not a group of fresh fractures but of late cases, some a few weeks after injury, others months or years later. All have come because primary treatment had been unsatisfactory. On the basis of these results it is obvious that some of us are not handling early fractures in the leg in the best possible manner.

PERSONAL FUTILE ATTEMPTS TO PROVE THE INFECTIOUS ORIGIN OF CHRONIC ARTHRITIS*

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I do not know just when or how I became interested in chronic arthritis, but I believe that it was Dr. Osgood who suggested that I spend some time in Dr. Loring Swaim's arthritic clinic at the Massachusetts General Hospital. At that time (1920) I was rather surprised at the enthusiasm and persistence which Swaim exhibited in the study of the disease. It seemed rather odd that one should be interested in a group of patients who offered little opportunity in the way of spectacular surgical or medical procedures and who persistently came back month after month with much the same complaints.

However, as the weeks went by I found more and more questions which we could not answer and I, too, became interested and acquired some of his enthusiasm in the study of chronic arthritis. During the next few years my efforts were largely clinical, but I carried on a few desultory experiments and studied pathological material and made cultures from arthritic joints when the opportunity offered.

Before coming to St. Louis in 1924, I conferred with Drs. Osgood and Hoke and we agreed that I might attack the problem experimentally in the laboratory at the Shriners' Hospital. Until that laboratory was closed two years ago, much of my time was devoted to efforts to reproduce chronic arthritis experimentally. During the same period I maintained contact with clinical cases by means of an arthritic clinic at Washington University which I started in 1925. When the Shriners' Hospital laboratory was closed I was given space in the Washington University School of Medicine and still have the opportunity to study the disease.

It is thus evident that during the past thirteen years I have devoted a considerable portion of my time to the study of chronic arthritis. It would be strange, indeed, if I had not tried to prove the infectious theory of the disease and to identify the etiological agent or agents. This is particularly true when I confess that as my knowledge of the condition broadened, the impression grew in my mind that atrophic or proliferative arthritis presents many characteristics which are most satisfactorily explained by a low grade infection as the underlying cause.

I also feel that an infectious agent may be responsible for clinical, as distinguished from anatomical, hypertrophic arthritis. By this I refer to the frequent observation that well marked hypertrophic changes may be present in a joint over a period of years and cause practically no symptoms, while another joint in which the hypertrophic changes are similar or even considerably less in degree may be the site of considerable pain. This so-called acute hypertrophic joint may exhibit swelling, tenderness, local heat and marked impairment of function. These acute symptoms are usually explained by strain or injury, but frequently this explanation is scarcely tenable, and I believe that the presence of a low grade infection explains the phenomena in a much more satisfactory manner.

Holding the above opinions, which are not of recent origin, it is natural that I should have made frequent attempts to isolate a causative agent from arthritic patients and that I should have attempted to reproduce the disease in animals by inoculating them with bacteria. However, in spite of a considerable amount of work which has extended over a period of years, I have published only one short note on the question of infection as the cause of chronic arthritis.[1] This is partly because I do not like to publish a paper with no conclusions or one which I may have to retract next year. However, this seems to be an opportunity to record briefly certain observations and I hope that you will not object if I end where I begin, that is, in doubt.

My first attempts to isolate organisms from the joints of patients with chronic arthritis consisted of routine cultures of synovial fluid aspirated from the involved joints. As these were almost uniformly negative, I then aspirated the joints and injected the fluid directly into the knee joints of rabbits, thinking, perhaps, that the disease might be due to some bacteria or virus which could be transmitted, but which I was unable to grow in artificial media. These attempts were also unsuccessful, as the rabbits did not develop chronic arthritis, even after several months.

Thinking that perhaps the causative organism was to be found in the peri-articular tissues

*Chairman's Address, Section on Bone and Joint Surgery, Southern Medical Association, Twenty-Seventh Annual Meeting, Richmond, Virginia, November 14-17, 1933.

†From the Department of Surgery of the Washington University School of Medicine, St. Louis, Missouri.

rather than in the synovial fluid, I devised a technic by which it was possible to remove some of this tissue with a large needle. The area was anesthetized with novocain and, using a 20 c. c. syringe and a 16 or 18 gauge needle, the needle was thrust into the tissues and moved back and forth while strong suction was maintained until some of the tissue juices were drawn up into the syringe. With this procedure it was possible to get some of the subsynovial tissue even from small joints. This was planted in hormone broth and glucose brain broth. The routine procedure was first to aspirate the fluid from the joint, inject this into six tubes of culture media; then obtain some of the tissue, draw up some culture media into another syringe, mix it with the tissue and distribute this among six other tubes. Thus, twelve cultures were taken from each joint. These cultures were kept for four weeks and were not opened until the expiration of that period unless some evidence of growth appeared in the tubes.

I began using this method early in 1926 and obtained a number of different organisms from the joints of patients with chronic arthritis. So many positive cultures were obtained that I became suspicious and cultured my novocain and found that not infrequently the novocain, which was obtained from the various hospitals in which I was working, contained organisms. I then prepared my own novocain and at each joint fluid culture I made a culture also of the novocain. This decreased the number of positive cultures very materially, but did not eliminate them completely, as positive cultures were obtained from about 50 per cent of fifty patients. The organisms were staphylococci, 15 times; diphtheria, 4 times; and mixed cultures of these organisms, 10 times. In two instances, short chained non-hemolytic streptococci were associated with a staphylococcus or a diphtheroid.

The question arose as to whether or not these bacteria were contaminations or incidental organisms, or whether they were factors in the production of the disease. On several occasions they were injected into the blood stream of rabbits with negative results. I then began to inject them directly into the knee joints. As a rule, about 1.5 c. c. of a 48-hour broth culture were injected into each knee joint of a rabbit. In most instances two or more rabbits were used for each organism. Not infrequently both diphtheroids and staphylococci were obtained from the same case, either as a mixed culture or sometimes one organism from one joint and another organism from another joint or different organisms at different aspirations of the same joint. These animals were kept for from three months to over a year.

In 1929, I reported observations on the knees of 77 rabbits.[1] These joints had been injected with 15 different cultures obtained from 88 aspirations and 9 operative interventions on 57 patients. Of the 154 rabbits' joints into which the organisms were injected, 40 were negative, while the remaining 114 exhibited pathological changes which resembled those of chronic arthritis. These varied from a slight excess of clear fluid with a small amount of synovial hyperplasia to joints which were markedly distended with cloudy fluid and in which there was marked hyperplastic thickening of the synovial membrane and villus formation; or joints in which there was relatively little excess fluid, but in which there was marked degeneration of the cartilage with considerable synovial proliferation and overgrowth of the bone and cartilage.

It is thus evident that some of these joints resembled atrophic arthritis while others resembled hypertrophic arthritis. When the rabbits were sacrificed, cultures were taken from the knee joints and in 25 per cent of these the organism which had been injected was recovered in pure culture. In not a single instance did these organisms produce pyogenic arthritis and in not a single instance did they produce arthritis in joints other than the knees into which they had been injected. In other words, the staphylococci and diphtheroids which I had obtained from the joints of patients with chronic arthritis produced chronic progressive non-pyogenic monarticular arthritis in a series of rabbits, but they did not produce the typical disease as seen in the human being. The staphylococci were virulent to rabbits in this respect in 66 of 84 experiments (74 per cent) and the diphtheroids in 34 of 50 experiments (66 per cent), while the two short chain streptococci were not virulent to rabbits.

In reporting these observations I stated that the results were open to three interpretations: (1) we were dealing with contaminations which were capable of producing chronic low grade arthritis in animals; (2) we were dealing with non-specific casual organisms which may be present in the tissues of patients with chronic arthritis, but which have no causative relationship to the disease; and (3) chronic arthritis is an infectious disease which may be due to any one of several organisms and is most often due to a low grade staphylococcus. I further stated

that it was probable that there is some as yet unknown abnormal susceptibility in those individuals who develop the disease.

After this paper was published I paid more attention to the sterilization of the skin before I introduced the aspirating needle and scrubbed the skin with ether and then used strong tincture of iodine and let this dry on the skin three times. This materially reduced the number of positive cultures until they became so rare that I concluded that they were largely, if not entirely, contaminations from the skin.

About this time Cecil, Nichols and Stainsby[2] reported their work in which they obtained positive cultures from the blood in a considerable percentage of their cases of atrophic arthritis. I repeated their technic to the best of my ability on 25 patients with atrophic arthritis whom I selected as being of the type which should give positive cultures. In 4 of these 25 cases the blood cultures contained staphylococci, but in none of them did I obtain a streptococcus. Similarly, Forkner, Shands and Preston[3] reported positive cultures of streptococci from the joints of arthritic patients and I repeated their work on 25 patients with the disease, using their media and methods. Here, too, my results were negative in that I obtained no streptococci in any of my cultures.

During the past year I have performed synovectomies on ten knees of patients with chronic arthritis. At each operation I have removed two rather large pieces of the synovial membrane and immediately planted one of these in plain beef broth and the other in glucose beef broth. In four instances positive cultures were obtained. Three of these contained staphylococci and one contained a diphtheroid bacillus. No streptococci appeared in any of these cultures, though all of them were incubated for four weeks and were not opened until this time had elapsed unless the flasks showed evidence of growth.

In addition to the attempts to isolate organisms from arthritic joints by cultures I have studied large numbers of smears of synovial fluid and microscopic sections of tissue from arthritic joints in the hope of being able to find bacteria in the fluid or tissues, but have not seen anything which I could identify as bacteria, nor have I found any intranuclear inclusions which would suggest a virus disease.

Since there is in recent years a strong tendency to incriminate some type of streptococcus as the etiological agent in atrophic arthritis I have on several occasions injected streptococci into the knees of rabbits in an effort to produce chronic arthritis in these animals. I have used hemolytic and non-hemolytic streptococci from throat cultures and a *Streptococcus viridans* from the blood stream of a fatal case of chronic bacterial endocarditis. In my experiments the streptococci either caused no permanent change in the joints or produced a severe purulent arthritis.

I was quite surprised at the production of purulent arthritis by the *Streptococcus viridans* and was also surprised at the wide variation in the resistance of normal adult rabbits to a given strain of streptococcus. If 1.5 c. c. of a 48-hour broth culture of any of the streptococci which I have used were injected into each knee of two rabbits one animal might develop purulent arthritis in each knee and succumb to the infection in from five to ten days, while the knee joints of the other rabbit which received the same amount of the same organisms might remain hot and swollen for a day or two and then return to an apparently normal condition. And when the knees of this second rabbit were examined some weeks or months later it was found that they were apparently normal and presented no changes which suggested chronic arthritis.

The above results: either no change or a fatal pyogenic arthritis, represent the extremes. But in other instances the rabbits survived and over a period of months the injected joints contained thick, glairy, purulent fluid. In these joints the synovial tissues were hyperplastic and the margins of the articular cartilage were invaded by the inflammatory tissue. In other words, these joints resembled atrophic arthritis, but they were really chronic purulent joints.

In other experiments, I have attempted to immunize rabbits by repeated subcutaneous injections of living cultures of *Streptococcus viridans* (which produced small subcutaneous abscesses) or by repeated intravenous injections of killed streptococci. Seventeen days after the last injection, living cultures of the same organisms were injected into the knees. The knees of both series of animals were practically normal to physical examination one week later. This suggested that either the rabbits had developed considerable immunity or that the cultures had lost their virulence. As the knees of five control animals which were injected at the same time did not develop purulent arthritis, I believed that the cultures had lost their virulence. In order to test this I inoculated the knees a

second time with the same organisms. This second injection was made seven days after the first (at a time when the knees were sensitive to the organisms). After the second injection all of the joints developed purulent arthritis and this was as severe in the immunized animals as it was in the controls.

It is thus evident that I have failed to produce chronic non-purulent poly-arthritis with any of the streptococci which I have used. This, considered with the fact that at no stage of the disease do the joints of either chronic atrophic or chronic hypertrophic arthritis contain pus, and with my own repeated failures to isolate streptococci from the blood or joints of patients with either type of chronic arthritis, leads me to doubt the theory that chronic arthritis is caused by a streptococcus. At the same time, I doubt that it is caused by the staphylococci and diphtheroids which I have obtained from the joints of patients suffering from the disease.

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DIETARY ERRORS IN THE SOUTHERN STATES*

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The discovery of vitamins has given great impetus to dietary studies with the result that much is now known about the deficiencies causing rickets, scurvy, beriberi, and other diseases. The relation of food to pellagra is also well understood, thanks to the work of Goldberger and his associates. Most of the food investigations that have been made in the South concerned pellagra and were confined largely to certain classes of the population, the inhabitants of cotton mill villages, inmates of jails, almshouses and orphan asylums. Very little work has been done on a comprehensive scale in studying the food habits of large cross-sections of the people and not much attention has been paid to the effects on the population as a whole of possible minor deficiencies in the diet.

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In addition to the diseases definitely known to be due to food deficiency there are undoubtedly "many vague more or less indefinite states of malnutrition" resulting from unknown or unrecognized deficiencies. Large numbers of our Southern people are probably affected in a deleterious though perhaps not striking or well known manner. Weston[1] and others think that much of the deterioration evident south of the Mason and Dixon line after the Civil War was the result of the universal malnutrition that followed the impoverishment brought on by the four years of strife.

Public health and school authorities have realized for many years the baneful effects of malnutrition, but the general public and the medical profession, too, have taken little interest in the matter of diet until within the last decade. Now, however, there has been a great awakening both among the laity and physicians, but there is much room for improvement yet. There has been no field so fertile as the field of nutrition for the faddist and the quack, and many unqualified self-styled "dietitians" have muddied the waters and prevented the laity from being guided by sound medical advice. The faddists seem to have an uncanny knack for publicity and they have given the lay mind much misinformation that is proving hard for the profession to combat.

Many forms of ill health are undoubtedly due to deficiency in diet. It has long been recognized that severe secondary anemia is often due to deficiency in calories, protein and iron, and will respond quickly to an increased intake of these elements. Nutritional edema on a large scale occurred among the population of the Central Powers during the World War and recently Youmans[2] has reported the existence of endemic edema in Tennessee. In his patients the diet was low in calories and protein and apparently such a condition is more widespread in this section than has previously been suspected.

Many neurasthenics live on an unbalanced, insufficient ration and there is a type of individual in our rural regions, usually a little below par in weight, sallow and scrawny, with frequent so-called "bilious" attacks, always listless and lacking in energy and initiative. The patient may be either a man or woman. Examination will reveal no definite pathological changes in a case of this type, but a study of the dietary will often show it to be deficient in one or more respects and there will be a gratifying improvement when a more normal diet is instituted. Malnutrition is of more importance as an etio-

logical factor in the causation of our proverbial Southern sluggishness and laziness than either malaria or hookworm, and it contributes more to the early physical decay seen in many rural Southerners than do hard work and exposure.

Recent studies of dental caries indicate that lack of vitamins C and D may be largely responsible for the condition, disproving the previously well advertised and generally accepted slogan that "the clean tooth never decays." Far too many rural Southern children have one or more cavities and the amount of caries among the adults is astounding. Is it not likely that the prevalent dietary deficiency in calcium and vitamins C and D may be largely responsible for this state of affairs?

Of course the relationship of diet to the definite deficiency diseases is too well known for comment, but the connection between diet and the conditions mentioned above is often not thought of. It is not only possible, but probable, that there are other abnormal states affecting adversely the population at large that are the result of minor deficiencies and that will become better known as our knowledge of foodstuffs and of what our patients eat increases.

As the writer[3] pointed out in 1929, the Southern practitioner is often confronted by almost insuperable obstacles in preparing proper diets for his patients, particularly in the rural districts. In the cities, where there are good markets all the year, the problem is not so difficult, but in the country, without markets, it is almost impossible during long periods of the year for a patient to obtain diets that are not deficient in one or more respects. Comparatively few families have year round gardens, despite the fact that valuable vegetables can be grown in this latitude at all seasons. The usual spring vegetables are at their best in May, June and July, and the fall gardens from the middle of September to the middle of November. In 1929, in Alabama, the value of garden products amounted to only $40.00 per family, exclusive of Irish and sweet potatoes, but this figure was probably exceeded last year because the depression forced the farmers to raise more of their foodstuffs at home. In the same year not more than 50 to 60 per cent of Alabama farm families produced sufficient milk for their own use and many of those who have cows and chickens sell their milk, butter, poultry and eggs and do not keep enough of these valuable foods for their own consumption.

Many of our rural populace live for more than half the year on a diet of bread, hominy, rice, potatoes, syrup and some form of salt pork. Not only is this true of Alabama, but it applies equally well to most of the other Southern states. Few studies of the rural diet have been made, but Dorothy Dickins, of the Mississippi Agricultural Experiment Station, has made some excellent investigations of the dietary habits of white farm families[4] and negro farm families[5] in Mississippi. Dickins studied the diets of 100 white farm families in 8 counties of 2 different sections of the State during the months of February, May, August and November, one month in each of the four seasons. It was found that cereal foods, salt pork and sugar were used without much seasonal variation, but that there was a notable variation in the use of fresh meats, fresh milk, butter, eggs, fresh vegetables and fresh fruit. The diet of the average family studied provided barely enough calories, protein and phosphorus, not enough iron and probably not enough calcium. Most of the protein, calcium and phosphorus came from milk. The meat consumption in the average family was low, many families using no meat except salt pork. Eggs were used nearly as much as meat, fish and poultry combined, and practically no whole grain cereals were used.

Due to the amounts of milk and eggs used vitamins A and B were probably present in sufficient amount, but vitamin C was insufficient except in summer, when fresh fruits and fresh vegetables were present in abundance. Vitamin D was usually found in ample quantity. There were seasonal variations in the nutritive values of these diets, due chiefly to variations in the amounts of milk used and to the types of vegetables eaten.

The diets of 80 negro families were found to be lower in calories, protein, phosphorus, calcium and iron than the white dietaries. It was found that the negro spent more in actual cash for food than the white man, but the white farmer raised 74 per cent of his food, the negro only 44 per cent. The characteristic of the negro diet is its high fat, low protein content. The negroes have fewer cows than the whites and their diets are lower in milk and fresh meat; in fact, the greatest difference in the two diets is in the greater quantity of milk consumed by the whites, which accounts for the larger amounts of protein, calcium and phosphorus in the white ration. The negro diets were usually deficient in vitamin A, possibly in vitamin B and definitely low in vitamin C. Vitamin D was not sufficiently supplied by the diet, but was obtained through the exposure of the negro child to

sunlight. Fifty per cent of these negro families lived mainly on refined cereals, fats and sweets. Given more money for food, the negro usually will increase the quantity of his food, the white man the variety.

These facts, as reported by Dickins, correspond closely, I think, with the general average in the Southern states, except that in my personal observation the use of milk has not been so widespread among the farm families as she found it. The majority of children in this section do not get the amount of milk daily that is generally considered necessary for their optimal growth and well being. Many cases that I see have too low a protein intake. In many the caloric value is insufficient and in many there are multiple deficiencies. Of course such diets as have been described are not universal, for there are many rural families, well situated in the economic scale, who have ample food intakes, but I believe that among the masses in the rural South the deficiencies mentioned do occur.

The South has established a reputation for the excellence of its cooking, but this skill in the culinary art is quite limited in scope, being confined mainly to those at the top of the scale economically. Even in the homes of many intelligent and well-to-do persons food is miserably prepared, while the cooking among the masses is atrocious. The majority of housewives can only boil or fry meat, which is usually overdone and cooked with too much fat. In most of the homes eggs are fried. Bread and potatoes are often heavy and soggy. Green vegetables are frequently cooked so long that all vitamin content may be destroyed and thus a vitamin deficiency may exist in spite of a plentiful supply of fresh vegetables on the menu. There is very little knowledge of proper seasoning. Open methods of canning and preserving as used in private homes result in a much greater oxidation and destruction of vitamins than do commercial methods now used.

The methods of cooking food are responsible for much of the digestive trouble that we see. Constipation, flatulence, heartburn and sour stomach are frequent symptoms. The coated tongue and frequent attacks of "biliousness" are due not alone to the menu, but to its preparation. Many persons take large doses of calomel at frequent intervals. Sometimes the symptoms simulate ulcer, cholecystitis and appendicitis, so that many an unnecessary operation has been performed when the proper treatment should have been merely a change of diet and a new cook.

It is bad enough for adults to have to live on such deficient, poorly cooked food, but when we realize that children, too, have the same ration it becomes a matter of more serious moment. Dickins found a greater number of physical defects among the children of the families on the poorest diets than among those who were better fed. Food likes and dislikes are acquired in childhood and children are likely to pattern after their elders. The chief food dislike among children is for green vegetables, and I firmly believe it is due to the miserable way in which they are prepared. Teaching the adults how to eat properly would solve the problem, for the oncoming generation would acquire the food habits of its elders; but unfortunately in addition to the obstacles of the poor markets and the inferior cooking is the problem of habit and prejudice among the population. The mass of people, accustomed all their lives to eating as we have described, are perfectly satisfied. In fact, they know no other kind of food and they like it that way. Fried meat they love, so that it is difficult for them to acquire a taste for broiled steak or chicken. Many cannot tolerate any but a fried egg. They like the soggy bread and the greasy vegetables. They have never eaten raw vegetables and I find it extremely difficult to persuade the average rural male to try them.

Oftentimes it is difficult to convince patients that the diet may be responsible for their symptoms. The more ignorant ones want medicine and they will take all the pills they can get, but they cannot understand the necessity of changing their ways of living. Cooperation is sometimes difficult to obtain from even the more intelligent people, who are loath to break the dietary habits of a life time. The problem is somewhat easier with adults than it was 25 years ago, thanks largely to the efforts of the pediatrists, who have been successful in feeding infants and young children; but even now much tact and perseverance are required on the part of the physician. Even in the cities the problems of poor cooking and of food prejudices plague us, although we are not worried by the inadequate food supply.

As to the remedy, not much improvement can be hoped for until the profession itself takes more interest in the question of diet than it has hitherto taken. Too often the physician's only dietary instructions are "Cut out meat" or "Don't eat so many sweets." These incomplete and indefinite directions are neither very helpful to the patient nor do they add prestige to the medical profession. Although there is still

much to be learned, so tremendous have been the strides in the last 25 years that we should be able to give our patients much sounder dietary advice now than ever before. The possibility of food deficiencies should constantly be borne in mind in the study of our cases.

The individual physician can instruct his own patients, but the masses should be reached through the extension departments of the state schools and the state health departments. They should be taught the necessity of year round gardens, of keeping cows and raising chickens, in order not to have to depend upon uncertain and impossible markets. Housewives should be taught the rudiments of cooking, of planning meals, and elementary facts as to the necessity of a varied menu. As food likes and dislikes are acquired early in life, especial efforts should be made to instruct mothers as to the proper feeding of children, for it is easier to form good habits than it is to change bad ones. Not a great deal can be accomplished for the present generation of adults, but the awakening of the medical profession to the importance of the matter and the educational measures now being attempted should bear fruit in the next few years and result in healthier, happier citizens in the future.

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DISCUSSION (*Abstract*)

Dr. Morris Flexner, Louisville, Ky.—The reputation that the South enjoys in the North in the matter of the culinary art is decidedly enviable, but unfortunately this is based largely on urban rather than rural diets. Dr. Wilkerson has stated a fact with which we long have been familiar and which we yet have been unable to rectify, namely, that the diet of the poor farmer is unbalanced. For the past few years this individual has been the victim of drought, politics and poor markets.

Muse and Gillum, investigating the food consumption of 50 Vermont farm households in 1931, found that only 19 out of 50 were satisfactory. Too much money was spent on meat and sugar and not enough on cheese and milk products. Forty-six per cent of the food was purchased, 54 per cent farm supplied. McKay and Brown, in following the food used by 113 rural families in Ohio during a three-year period, found a similar condition: too many calories from meat and sugar, not enough from dairy products and vegetables. However, from 72 to 74 per cent of the food was home raised. This report coincides with one item in Dickins' report, namely, the percentage of home raised and eaten food. The details of the diet are at variance, the Northern farmer being on a much better balanced ration. There is one point I wish to make from personal observation and Southern "hearsay" concerning the negro's high fat, low protein, poor vitamin diet. Negroes do eat "greens" a number of months out of the year, either collards, dandelion, cabbage, turnip, or mustard, and undoubtedly get some vitamins A, B and C and mineral salts from them. The questionable value of pot liquor as to vitamin content has been argued at length. Recently the National Dairy Council has fostered a "Put the milk pitcher back on the table" movement. This was directed at the farmer primarily to help reduce the present excessive supply of cheap milk. The movement may well be extended into the city, for its benefits are obvious.

I am heartily in accord with the stand the essayist has taken against the frying pan. The sooner we teach people, both in cities and on farms, that the covering of food with a greasy envelope increases the difficulty of digestion the sooner shall we notice a diminution in the number of cases of dyspepsia, pyrosis, so-called gastritis and many functional disturbances.

Undoubtedly the time to begin to teach an individual to eat properly is in infancy. Children must be encouraged to eat everything, a responsibility of pediatricians and parents. To see that food is properly prepared is also their combined task. No child must be allowed to leave any article of diet untouched on its plate. At the same time the parents must set the example and above all things not make the deleterious remarks which will influence the children.

Our citizens should be taught proper canning processes and encouraged to eat canned foods when fresh are not available. In well canned food the vitamin content is high, in poorly cooked or canned food with long open boiling the vitamins are oxidized. I, too, feel that this is a state responsibility, and in Kentucky one that was shouldered during the War, but now, in a greater crisis, is sadly neglected as in many other states. Vitamin C suffers the most. In tomato juice it is not spoiled by careful cooking or canning because of the acidity. Its use should be pushed.

As to the cooking in the better homes and restaurants of the South, besides my heartiest appreciation I offer the following criticism: too much food is served; it is too highly seasoned and too rich. The use of tabasco, all the peppers, mustard, and so on, increases in direct proportion as the Equator is approached. These strong condiments must have some irritating effect on the gastric mucosa. Possibly the early age at which they are introduced into the dietary serves to increase gastric resistance, but their use over a long period, I feel, must give a change of some permanency.

In this great economic crisis which confronts us with its poor diets in certain districts one wonders what effects will be handed on to the next generation. I have seen the statement that in Germany the real defects, particularly the bone changes and the more serious vitamin, mineral and low protein disturbances, such as nutritional edema, did not appear in large numbers until after a few years of privation and poor diets. Let us hope we shall have our situation under control here before such a span has elapsed.

Like the essayist, I feel this whole problem is one on which the medical profession can exert a tremendous influence, both as physicians and as citizens, to see that proper legislation is enacted so that state money may be spent teaching people, both rural and urban, something about a proper diet and its preparation.

Dr. John B. Youmans, Nashville, Tenn.—I should like to emphasize two points in connection with Dr. Wilkerson's excellent paper. It is obvious that these diets are deficient in many respects and might well lead to one or more of several deficiency diseases. Clinically, some of these, as anemia and pellagra, are fairly frequent; others, beriberi and scurvy, for example, are not commonly observed. However, we are apt to look only for characteristic, fully developed cases. In view of our ignorance of the manifestations of latent or subclinical forms of many of the deficiency diseases, it is possible that they occur much more often than we have suspected. There is some evidence to indicate that such is the case and that the existence of mild deficiency states is an important factor in the health of certain groups of the population.

The second point is that in our zeal to search out the specific factors, the absence of which is responsible for the various deficiency diseases, we are apt to think of treatment and prevention in terms of specific substances or medicines to be added to the diet. In many instances this is not necessary and certainly for the mass prevention of these diseases a good general diet will be a sufficient and the best preventive.

Dr. L. Carl Sanders, Memphis, Tenn.—We are realizing more than ever before the relationship between certain pathologic conditions and dietary deficiency. A large number of patients complain of headache, fatigue, nervousness, insomnia, indigestion and constipation. They are often classed as neurotics or their trouble is diagnosed as chronic nervous exhaustion. Careful inquiry into their habits reveals the fact that they eat very little and their diet is deficient in vitamins. Physical examination and laboratory tests are usually without positive findings.

These patients improve rapidly on a full diet with plenty of green vegetables, fruit and milk. Cod liver oil and yeast are helpful.

Dr. Wilkerson has presented an important subject and this section is indebted to him for his excellent report.

THE RELATION OF THE PROBLEM OF MENTAL DISEASE AND MENTAL DEFICIENCY TO SOCIETY*

By W. D. PARTLOW, M.D.,
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In considering any phase of the problem of the insane and feeble-minded, the usual approach of the psychiatrist is from the standpoint of his interest in his patient. Let us for a brief few minutes consider this problem from the viewpoint of the interests of society and of government.

An ideal social organization from purely social and political aspects would be one in which all of its adult members are economically at least independent and none are economically dependent on others of the group. In the progress of human advancement and evolutionary social and economic development, every individual member who becomes in any way dependent becomes a hindrance or handicap to the progress of the remaining members of the group and to the entire group.

The ramification of this idea runs throughout our political and social organization and it means that not only dependency due to disease or affliction of any members of the group constitutes a handicap to the remaining members of society, but also the idea may be followed further to the conclusion that the greater the number required to conduct the affairs and carry out the social and political scheme of government, those so engaged also become a burden and handicap to the other members of the group to support and to carry. So much for simplicity of government.

Likewise the members of society who are unable to carry on constitute another clog in the wheel of progress and include all who by reason of disability, physical, mental or moral, are unable to keep pace independently with the average of the human race.

Those who are falling by the wayside because of the inability or failure of the brain to direct and to keep within the bounds and accepted limitations of organized society, seem to be increasing in numbers. This is true in crime, delinquency and dependency, our three greatest social problems, all of which have their economic and political aspects as well.

It is not within the province, however, of this discussion to follow further the suggested idea except as it relates directly or indirectly to brain deficiency or brain defect. The big question to answer is, "Are we so handling this phase of the problem that it is diminishing or improving or is it a growing menace and handicap to the progress of the human race?"

For your consideration in support of the negative answer to the above question may I submit some figures and data? In 1880 there were in institutions in America a total of 31,973 inmates, while at the end of the year 1928 there were 272,527. This last figure, of course, does not include the great numbers on parole from institutions and those who are being cared for in homes and private institutions.

In 1880, the ratio of insane was 63.7 to 100,000 population, while in 1928 it was 225.9 per 100,000. The ratio within forty years had in-

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creased more than three and one-half times of the insane only. This does not take into account the problem of the feeble-minded, which has had attention for only a brief period of more than thirty years.

When we take into account the average earning capacity of an individual on the one hand and the cost and inconvenience to relatives on the other hand, to say nothing of the incapacity a dependent member of a family may inflict on the other members, we see something of the growing handicap and burden of this problem immediately to the relatives, and when we go further to consider the cost to the states we aggregate an investment of more than $300,000,000.00 in capital outlay and an annual maintenance cost in 1930 of $105,733,982.00 for the care and treatment of the insane, and an additional average annual investment of approximately $14,000,000.00 in additions and improvements of these institutions. In addition to this, for 1930 alone the cost of maintenance of institutions for the feeble-minded, including improvements, was $23,812,303. The average cost of maintenance alone for the year 1929 was $312.18 per capita and in 1930 $302.74 per capita.

Now, while this item of government alone may not appear to be a great tax burden on the public, the alarming feature is that it is rapidly growing and when added to the great burden of crime, cost of courts, maintaining public health and other features of public expense whose function is to take care of the incapacitated members of society, it becomes alarming as we project ourselves another generation in the future at the present rate of growth of this handicap in tax burden to the members of society who struggle to carry on.

Relation to Other Social Problems.—When we come to consider that human behavior and human reaction to environment and to the problems incident to living in civilized society are directly related to brain capacity and brain equilibrium, we are brought face to face with the most important aspect of this problem, the relation of mental disease and mental deficiency to our leading social problems, crime, delinquency and dependency. In normal times and under normal, usual, average conditions, a very high per cent of the numbers of inmates of institutions for the care of dependents by careful survey will be found to be mentally deficient. The same is certainly true in all correctional institutions for delinquent boys and girls, and in all prisons for the care and keeping of adult behavior irregularities and violations.

In addition to all of this the problem of mental deficiency particularly has an important bearing on our general scheme of education. In the first place in the program of education the curriculum set, to be rational, should be fitted to the capacity of the individual rather than subjecting all individuals of varied capacities to the same tasks, tests and trials of a uniform curriculum for all. In other words, education will finally have to come to the task of determining the mental fitness and capacity first and then adjusting a program of education to the mental aptitudes and abilities of the individual.

Now, it has been the purpose of this paper to raise a number of questions without attempting to answer any. If the discussion has stimulated any thought on the part of psychiatrists it has served its purpose.

After all, our great problem for society's interest and the perpetuity of the human race is a program of prevention, mental hygiene. As we turn to view this great number of insane and mentally deficient, either individually or collectively, our question has been largely, "How can we relieve, take care of and benefit the patient?" Should we not now begin to turn our attention to an answer to the question, "What could have been done in the past to have prevented the development and accumulation of this mass of insane and feeble-minded?" and thereby be able to answer the question, "What can be done now and in the future to check or curtail the appalling increase and growth of this social and economic handicap?"

DISCUSSION (*Abstract*)

Dr. E. Goldfain, Oklahoma City, Okla.—If society would assume an aggressive attitude toward the management of this problem, the immense burden would be greatly ameliorated. Criminal personalities can be classified as:

(1) Those whose anti-social acts are due to toxic and organic destructive processes. Under this heading comes cases of arteriosclerosis, mental deficiency and diseases of the central nervous system, which render the person unable to distinguish between right and wrong and thereby make it possible for him to perform anti-social acts without being aware of their full effect. Cases of mental deficiency would fall in this classification, therefore, and should be handled along the line of institutionalization and steri'ization.

(2) The neurotic criminal. This person is one who, as the result of internal conflict, performs anti-social acts which he recognizes are anti-social, but which acts are the same as the obsessions of individuals with mental disease. In this class, the problem is not punish-

ment. Punishment simply makes such a person feel that he has paid the price for his transgression and is free to repeat the act and pay for it again. In these cases, the services of a psychiatrist in helping the patient to get an insight into his conflicts would be curative. Legal punishment is provocative. Under this classification come such conditions as kleptomania, pyromania, pathological liars, and so on.

(3) The normal criminal. In this classification are those individuals whose anti-social acts meet with their own endorsement. They are those individuals who, as the result of their particular environment in life, during their early formative years, have not acquired a super ego, in other words, a psychic policeman, who scans their anti-social urges and forces those which conflict with the established laws and codes of the social order to remain in the mind of the individual and not to express themselves in actual transgressions. These, usually, are the individuals who have been brought up in homes where the training has been deficient in such things as church activities and who have had set before them examples of anti-social conduct by their parents and immediate associates. In these individuals only can legal punishment as it is now constructed be of any real value; for in them, the fear of punishment is the only real deterrent to the performance of anti-social acts.

The relation of the problem of mental disease and mental deficiency to society must be handled along this broad psychological basis.

Dr. R. H. Bryant, Birmingham, Ala.—Dr. Partlow made no attempt to discuss remedies, but merely gave the facts as they exist. These facts, of course, must first be understood before attempts at remedies are instituted.

During the past years of depression the financial problem of caring for society's dependents has become very real.

Society has already accepted as its responsibility the care of those of its members who are so unfortunate as to become dependent, and also the protection of its members from those who are not responsible, and from those who may be responsible, but who fail in living up to the responsibility of citizenship.

The mentally abnormal of whatever kind certainly come within that category.

Everyone with even a limited knowledge of the institutions for caring for the mentally abnormal, I believe, will agree that this burden or duty of society is increasing. Whether or not this increase is due to an actual increase in the number of mentally abnormal is a matter of little consequence for the present discussion. The fact of this increase is important, for it is this fact, among others of course, that accounts for the added expense of caring for them, and will continue to do so.

It appears to me that it brings up two questions, both of which must be answered:

(1) The question of how best to prevent mental abnormalities.

(2) The question of just how much will that part of society which does the paying be willing to spend in the care of these dependents. Medical men must point the way, but in the end what they accomplish will depend upon the attitude of society.

ERYSIPELOID OCCURRING AMONG WORKERS IN A BONE BUTTON FACTORY*

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The conditions reported here appeared among the workers in a bone button factory at Buchanan, Virginia, where it had moved from Philadelphia in the latter part of November, 1930.

The bones used are cattle bones obtained from slaughter houses, mostly from South America, but some from Europe and some from Chicago. They arrive well cleaned, but are a little "green," and carry a slight odor. As they are needed for use they are warmed to about 110° F. in large concrete tanks of water, where they remain from a few hours to several days. From these tanks they are taken to small circular saws and cut into slabs. The slabs are then carted on to other machines, where the round buttons are cut out. The buttons go to revolving polishers, are sorted and packed. A few are dyed. All refuse pieces of bone are ground into bone meal fertilizer.

The factory employs a total of anywhere from 150 to 210 workers, including the women sorters and packers. About 50 men are employed in the sawing department and about 65 on the machines for cutting out the buttons. Shortly after the plant was transferred to Buchanan infections began to appear among the workers. We are told that there were few of these infections while the plant was in Philadelphia, although as far as we know there is no difference between the new plant and the old except that in Buchanan the employes are mostly rural. The infections were recognized from the beginning as typical erysipeloid.

Under the title of *erythema serpens,* W. Morant Baker[1] was probably the first to describe this disease. His description of the infection and its clinical course is so excellent that we have little to add at the present day. His illustration is very accurate and clear, but shows the lesion as a pink where we observe a more dusky purple. In the matter of priority, he attributes a previous description of the disease to Tillbury

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Fox, quoting him as reporting two cases due to the dyes in cheap goods which were constantly rubbed on the hand. Baker emphasized the fact that this type of trouble was much more prevalent among the handlers of animal material.

Later Rosenbach[2] described the disease under the name of erysipeloid, saying that it was then well known to physicians. From the lesions he grew an organism on gelatin. Although he was unable successfully to inoculate rabbits with this, he did succeed in producing an almost typical erysipeloid on his own arm. He made no classification of the organism, but mentioned that it was somewhat like one that had been previously described under the name of *Cladothrix dichotma*.

Gilchrist[3] reported 156 cases and writes that the condition was so frequent at the Johns Hopkins Hospital that the cases were readily recognized by every one as crab dermatitis. Later he[4] made a more intensive study of the condition, but was unable to grow any organism or even to transmit the disease by inoculating into another area directly from the lesion or to produce the disease from the juice of ground up crabs passed through a filter. He thought that a ferment from the crab was carried along by the lymphatics, causing the trouble. Other workers have repeatedly isolated an organism of the swine erysipelas type. Klauder and Harkins[5] have made a most exhaustive study of the condition as occurring in the United States.

Since the beginning of operations in the factory in Buchanan, from late November, 1930, to December 20, 1931, there have been 210 cases of erysipeloid under our observation. Most of these infections occurred among the men sawing the bones or cutting out the buttons from the sawed slabs. The infection has started only after some skin injury such as occurs frequently about the saws or in handling rough pices of bone, and there has been an infection after nearly every skin injury. A man not associated with the factory became infected through abrasions on the back of his hand while putting bone meal on his yard. An infection occurred on the knee after it had been bruised against a machine, another on the foot from a cut due to a piece of sharp bone that dropped and pierced the shoe. All the others occurred on the hands, except 8 further cases, 5 of which involved the eyes and 3 the bronchial tubes. These will be discussed separately.

After the initial injury the infection as a rule is apparent on the third or fourth day and may last from fourteen to twenty-one days. A few of the milder cases clear up in nine days. From the point of injury, the inflammation gradually spreads, eventually taking in a large part of the hand. Its edges generally are well defined. Sometimes it may clear up in a finger originally infected and then spread down another; in a few cases the process has even gone back down the finger that had previously cleared up.

The parts involved are swollen, rather immobile, tender, feverish, and there is much local pain. None of the patients has shown any general rise of temperature. There seems to be no permanent general immunity, nor any permanent local immunity. One employe has had the infection as often as 4 times. Many have had repeated attacks in the same hand or even in the same finger. The swelling rarely goes above the wrist. Sometimes there is lymphatic streaking and occasionally enlargement of the epitrochlear, rarely of the axillary glands. In only one case has there been suppuration. Some of the patients complained of severe pain in the shoulder on the involved side.

Three of the employes engaged in grinding the pieces of bone for fertilizer developed a bronchial trouble with dyspnea. The cough was constant, harassing, and very hard to control, producing much pain in the chest. There was some expectoration of mucus, but none of blood. The temperature as a rule was subnormal and the patient was chilly. One patient was alarmingly sick, but without fever. On examination there was no dullness on percussion and only bronchial rales were heard on auscultation. After coughing up the particles of bone dust the men were considerably relieved. All 3 workers with the ground bone had to quit because of the recurrence of their infections. With a few, the bone dust gave no trouble.

Five more of the workers got bone dust in their eyes and developed a rather severe conjunctivitis, with marked edema, lachrymation, photophobia and pain. The eyes were irrigated with boric solution, searched for particles of bone and then treated with one of the mild silver preparations. Under this treatment the eyes generally cleared up in about four days.

From December 20, 1931, to June 1, 1932, there have been only 27 additional cases of hand infection and two eye infections. This decrease has been due both to lighter operations and to efforts to get rid of the infection.

Because of the finding of almost pure cultures of spirochetes in one of the vats, one patient was treated with sulpharsphenamine with good

and rapid improvement. But then the infection quickly spread down another finger.

We have tried many local treatments, none of which seemed to change the course of the disease. Lately we have used the 10 per cent salicylic acid ointment as recommended by Gilchrist, which seems to help a great deal.

Dr. G. Foard McGinnes and Forest Spindle, of the Virginia State Department of Health, working with us, have made a very thorough epidemiological and bacteriological study of this condition. They isolated the bacillus of swine erysipelas from a typical case and from the bones and waste material. Their report will be published separately.

In brief, in the study of 247 cases of erysipeloid we have found 237 typical skin infections and 10 very unusual conditions, 7 occurring as eye and 3 as bronchial infections.

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A CASE OF LONG STANDING FEVER PROVEN TO BE MALTA FEVER*

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A woman, age 31, in 1917, had high fever accompanied by rigors. Malaria plasmodia were found in the blood and she was treated for malaria. After having taken the quinine treatment, the fever subsided and comparatively good health was enjoyed until 1926.

In 1926, the patient had another attack of fever which began with an insidious onset and abdominal distress. An appendectomy was advised and done, but instead of an improvement, the symptoms increased, fever went higher and lasted for several months. With fever 105° and rigors it was thought that malaria was the diagnosis again. This time the condition was not diagnosed by a blood smear, but the standard malarial treatment was given followed by sodium cacodylate in the vein. Still the fever did not completely subside.

Since the illness of 1926 she has had an intermittent fever appearing at times during the winter months, but usually starting in April or May and persisting through the summer. The range in temperature for the last year has been from 96.6 to 100.2°, the temperature being higher in the afternoon and at times accompanied by chilly sensations and sweats.

The general symptoms may be tabulated as follows:

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Weakness.—The patient tires easily and remains in bed most of the time.

Sweating.—Profuse at times, mostly at night, but occurring during the day also.

Arthralgia.—Especially noted in the large joints, the left hip, both knees and the back.

Myalgia.—Occasionally experienced, is general, and is accompanied by severe headache and pain in the back of the neck.

Abdominal Symptoms are marked. They consist of epigastric discomfort, soreness in the lower abdomen and a feeling of fullness. These symptoms are severe enough to cause sleeplessness.

Nausea.—A constant symptom which was probably aggravated by severe constipation. Purgatives and enemas were taken routinely.

Cough.—A non-productive cough has been present since the onset of the illness.

Insomnia.—This is due to apprehensiveness and abdominal distress and has been hard to combat.

Genito-Urinary Symptoms.—A urinary frequency has persisted which made it necessary to arise three to five times during the night. All of the above named symptoms and the fever are, at the present time, exaggerated during the six or eight days before menstruation commences.

Physical examination showed nothing of particular note except that symptoms were all out of proportion to the physical findings, which is a characteristic of undulant fever. The patient had an anemic appearance which was misleading, as the blood count will show. All teeth were x-rayed and found to be in good condition. She had recently undergone an operation for sinus trouble. Pus was found in the sinus, but her physician did not consider that the seat of the trouble. The tongue was heavily coated and cervical lymph nodes were palpable. The chest was negative and confirmed by x-ray. The liver and spleen were not palpable. No tenderness was evident over the kidney area. There was some tenderness over the entire abdomen, more marked, however, in the left lower quadrant. Rectal examination, digital, showed small thrombotic veins. Proctoscopic examination showed an inflamed mucosa, with grayish patches, which bled easily and seemed to be boggy. Pelvic examination was negative except for tenderness in the body of the uterus and more marked tenderness over the left adnexal region. The reflexes were normal.

Blood pressure was 124/80, temperature 99°, pulse 100, basal metabolism plus 5 to plus 8, x ray of chest negative, x-ray of abdomen and pelvis negative, and an intravenous pyelogram was negative.

In reviewing the available literature on Malta fever, which included all that in the mailing library of the American Medical Association, I was especially interested in the emphasis put on positive agglutination tests at the different dilutions. It was generally stated that Malta fever was not to be diagnosed by the laboratory man alone, but only in cooperation with him if the symptoms and signs pointed to the diagnosis. Some cases have been reported which gave negative agglutination tests, but were proven to be undulant fever. Simpson and Frazier, who reported 63 cases occurring in Dayton, Ohio, say, "For practical purposes we have considered that agglutinations in titre of 1:80 or above, or the recovery of the organism from the blood or urine constitutes positive evidence of presence or previous existence of undulant fever." Dr. A. V.

Hardy of Iowa City, in a report of 125 cases says, "If there is complete agglutination in 1:160 titre, it may be expected that the case will prove to be Malta fever." Two cases of death from proven Malta fever showed positive blood tests at dilutions no higher than 1:80 and 1:160.

The laboratory findings in this case were as follows: red cells 4,190,000 with 85-90 per cent hemoglobin. A series of white cell counts was taken during the presence of fever and no count was more than 9,000. The average count was less than 6,000, with some as low as 4,500. No abnormal cells were found. The differential count which was checked showed neutrophils 62, small lymphocytes 34, large lymphocytes 1, and eosinophils 3. Malaria smears were persistently negative. Therapeutic test with plasmochin compound was carried on for more than two months. Tests for typhoid fever were negative, also for tularemia. Blood culture was negative. The urine was negative except for a few epithelial cells, microscopically. The stool was negative for parasites. Vaginal smear showed gram-negative extracellular diplococci (*Micrococcus melitensis?*) The tuberculin skin test was negative for 0.01 mg. and for 1 mg. Agglutination tests for Malta fever were positive at 1:40, 1:120, 1:160 (three different tests). These were taken while the patient was having a daily rise in temperature. Six weeks later two more tests were made. At this time fever was present only eight days during the month. These tests were made when there was no fever and they were negative.

Summing up the facts which point to a diagnosis of Malta fever, we have (1) long standing fever, intermittent, and not yielding to quinine; (2) weakness; (3) constipation; (4) urinary frequency; (5) epigastric and abdominal distress; (6) non-productive cough; (7) arthralgia, especially of the large joints; (8) myalgia; (9) headache; (10) pain in the back of the neck; (11) sweats and chills; (12) more symptoms than physical findings; (13) leucopenia; (14) small neutrophilic count; (15) negative malarial slides; (16) negative malarial therapeutic test; (17) negative tuberculin test; (18) negative chest plate; (19) negative abdominal plate; (20) negative tularemia; (21) negative typhoid and paratyphoid; and (22) positive for Malta fever in three blood agglutination tests at titres of 1:40—1:120—1:160.

I believe the diagnosis is Malta fever with a focus of infection in the organs of reproduction.

TREATMENT

This has been symptomatic. On proctoscopic examination a colitis was found. This was treated with six gallon colonic irrigations three times a week for two weeks. After the first two irrigations nausea disappeared, and is present very infrequently now. Purgatives were stopped, a non-irritating diet and mineral oil started, and purgatives have not been necessary since. Young's rectal dilators were used each morning to help establish a habit time. At the end of the two weeks the patient slept all night for the first time in several months.

She takes moderate exercise and is in the sunshine at least two hours a day.

For a month diathermy treatments were given to the uterus and adnexa, at 106° F. for twenty minutes every other day. The following month fever did not appear until the sixth day before menstruation and stopped with cessation of menstruation. Diathermy was continued the following month with the result that arthralgia and abdominal symptoms decreased considerably, and fever was present only eight or nine days each month, previous to menstruation.

Of course no dependability can be placed on the results yet, but if the focus of infection is in the uterus and adnexa, as I believe it to be, I think the local diathermy will be of value.

Acriflavine, mercurochrome, and vaccine treatment have been reported with varying results, and I am sure that by this time someone has tried hydrochloric acid. So far, however, no one drug or treatment has been effective enough to be outstanding in the treatment of Malta fever.

After the diathermy treatments were discontinued, the patient was given three series of vaccine at six-week intervals. Two of the series were of *melitensis* vaccine and one of Bauthe's *abortus* and *melitensis* mixed. The best results were obtained from the *melitensis* vaccine. Following the injections, which were given every third or fourth day, all symptoms were exaggerated and there was an elevation of temperature. Following each series the patient was definitely better both physically and mentally.

At present fever is noted only one or two days during the month and although a cure has not been effected, the patient's condition is very much improved.

THE NEW ERA IN PRESCRIBING*

By HUGH L. DWYER, M.D.,
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In the recent report of the Committee on the Costs of Medical Care it was stated that the American public spent approximately 715 million dollars annually for medicine, and that only 140 million, or less than 20 per cent, was for medicines purchased on physicians' prescriptions. If we add to this the 25 million dollars' worth of drugs dispensed from physicians' offices and a like sum from hospitals and dispensaries, we find that 27 per cent of the expenditure for medicines was under the direction of the medical profession. The remainder of this huge sum, 525 million, or 83 per cent of the total, represents the amount spent by the public for self-medication.

It is apparent from these figures that many people believe they are competent to prescribe for themselves when they are ill and that the purchase of medicine is a substitute for the services of the physician.

No one will contend that all the medicine con-

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sumed by the public should be obtained upon the advice of the physician. There are many "home remedies" that are generally approved by the profession—safe, inexpensive preparations of known composition, particularly in the fields of local antiseptics and laxatives. The money spent for these household remedies constitutes about 25 per cent of the total.

About 50 per cent of the total cost of medicines, 360 million dollars, goes for patent medicine. The medical profession has long recognized this enormous traffic in patent medicine as a source of danger as well as a tremendous waste of money.

The profession, of course, regards the use of medicines as a corollary to medical practice, subsidiary to the physician's services and justified only after it is determined that the individual is in need of medication. But the public has an insatiable thirst for medicines and in this it is encouraged by the manufacturers of package medicines with euphonious names, oftentimes with accompanying literature detailing a list of symptoms which will help the patient to catalogue his complaint and justify his purchase.

Not all the medicine consumed by the public without the advice of the physician is "patent" medicine as the term is commonly used. There are many so-called "ethical specialties" or "controlled-name" products of definite merit and advertised only to the profession. They belong to the same category that many of our well known patent medicines belonged to before they became popular. In short, many of these "ethical specialties" are in the process of developing into popular preparations that will be hawked about in the department stores when the public learns more about them.

The responsibility for the widespread use of proprietary medicines can, in a great measure, be laid at the door of the medical profession.

In recent years there seems to be an almost universal urge among physicians to acquaint the patient with the name, uses and the probable cost of the medicines he prescribes. He has probably come to this because he is not familiar with the numerous preparations that are brought to his attention by the letters, the blotters and the "detail" men who come to expound the superiority of the latest product. He cannot possibly be sure of the therapeutic effect of all these preparations and he shares the responsibility of prescribing them with his patient by familiarizing him with the therapeutic claims. If the drug is not effective he can blame the medicine, not the physician.

SAMPLES

The office of the physician now-a-days is being flooded with samples, to be handed out to the sick and the near sick, sometimes accompanied with descriptive literature so that the public is thoroughly educated regarding the name, the price and the indications for use. After they are thus introduced by the profession the demand becomes so great that they are sold by name over the counter, advertised by placards in the stores and in the newspapers. Thus what started out as an "ethical specialty" becomes a patent medicine.

There was a time when physicians were concerned with the activities of the pharmacists because of "counter prescribing" by the latter. But the evils of "counter prescribing" pale into insignificance compared to those that have sprung up since the advent of the samples.

Few physicians realize the harm that may come when they hand a sample to a patient. I have known the physician to explain the virtues of a "systemic alkalinizer" to his patient as the very thing she needed to counteract her symptoms while he reached into his pile of samples of effervescent salts and, to his chagrin, the patient coolly informed him that she had been taking the same preparation for six months. And when one reaches for a sample of agar in oil it may save some embarrassment first to ascertain which preparation the patient has at home.

When the physician has no sample he may write the name of a proprietary on a slip of paper. The patient not infrequently stops in the drug store with his sample or his slip of paper to inquire into the virtues of the drug. In the mind of the patient everyone connected with a drug store knows something about medicine and especially every clerk further back than the cigar counter. So the patient stops the nearest clerk and asks "What is this good for?" After the clerk makes his explanations, which may not coincide with the patient's conception of his needs, he may turn away skeptical of the physician's advice with the exclamation "There's

nothing like that wrong with me!" In this way reputations are hurt and ill-feeling is engendered between physician and patient.

The physician and the legitimate pharmacist have been irreparably harmed by the former acting as an advertising medium for the package drug manufacturer. There is nothing to gain and much to lose by prescribing branded tablets or other medicines intended to be dispensed in the original package, which, by the way, is often a distinctive bottle with the name stamped in the cap. This tends only to promote the interests of the manufacturer; it detracts from the prestige of the physician.

CONTROLLED-NAME PRODUCTS

The tendency to prescribe special preparations of pharmaceutical houses instead of U.S.P. and National Formulary products puts the pharmacist to the expense of stocking his shelves with the special preparations of several manufacturers even though these preparations are in all essentials the same.

Consider, for example, the oily solutions of ephedrine, the codeine cough mixtures and the barbituric acid sedatives. In the past few years we have passed through a wave of intranasal medication when most people have been spraying ephedrine in their noses. The several preparations of this agent differ from one another principally in name (or number) and to a less extent in ingredients so that the pharmacy must stock all the best advertised brands.

Six physicians who may desire a codeine cough mixture may each use a different name to obtain preparations that are essentially alike. Likewise in the field of barbiturates one may find a half dozen controlled-name products. A like number of physicians will each prescribe a different tablet, not because they prefer the action of one over the other, but because they are not familiar with the non-proprietary names and have been educated to proprietary names. The physicians who prescribe urotropine by its non-proprietary name and those who can prescribe argyrol by its correct non-proprietary name are very few, indeed.

When a prescription calls for a "controlled-name" product or a manufacturer's name is given, the pharmacist is restricted to the most expensive and most exploited product. This also invites the patient to familiarize himself with the name of the product. All prescription clerks are familiar with the customer who, while approaching the prescription counter, re-reads the prescription for the last time to be sure to not make a bobble, then pockets the prescription and asks for the medicine by name. And the name is usually short, euphonious, one might also say unctuous, easy for the layman to grasp. The name is often an abbreviation of some active agent which it contains, or it has a quasi-scientific tinge that enables the physician to remember it and to associate it with the relief of some symptom.

One must not blame the manufacturer. He is in the business to sell medicine; no doubt he believes in his medicine, he coins the catchy name and advertises it in such a way that it sells. The public wants medicine and he is there to supply that want.

INFANT FOODS

The prescribing of prepared infant foods has just about slipped out of the hands of the physician. As is well known, there are a number of proprietary infant foods on the market that can be used successfully and often to advantage. They are not advertised to the laity, no feeding directions accompany the package and this is a great talking point for their endorsement by the profession.

But the samples come to the physicians' offices and they find their way into the mother's hands when her baby has the slightest discomfort. The very presence of the samples of infant food seems to be a challenge to change the baby's food. It is easy to hand the mother a sample. And not a few mothers have the celluloid "feeding" card intended for the physician, to run their own show. The pediatricians are not responsible for this because they do not hand out samples. But the general practitioner who finds it difficult or who will not go to the trouble to learn something about infant feeding, grasps at every new infant food as if the millennium had come in infant feeding. The most popular infant food in the community is the one extolled by the last "detail man."

There is another very prevalent and pernicious practice in the infant wards of some of our large hospitals that helps to alienate the mother from

the physician in the matter of infant feeding. I refer to the "detail man" who visits the hospital to "contact" the supervising nurse. Nearly all the nurses in charge of the babies' wards of my acquaintance have had the virtues of this or that infant food explained to them, this to be followed in due time with a generous supply of samples. These, I presume, are to be tried on those babies in which the physician leaves the question of complemental feeding to the judgment of the nurse. When the baby goes home on one of these preparations the mother is instructed in its use and she loses contact with her physician. In fact, she is more likely to telephone to the hospital for additional instruction when it is needed and she thinks of the nurse first instead of the physician when the baby is upset.

Several of our large manufacturers deserve a great deal of credit for the preparations they have developed and for the large amounts of money they have expended in the investigation of medicinal products, particularly in the field of biologicals, vitamins and infant foods. They are not all engaged in exploiting the medical profession. They submit their products to the Council on Pharmacy and Chemistry of the American Medical Association for their approval before they are advertised to the profession.

OFFICIAL PREPARATIONS

Every physician should make use of the publications of the Council, the "Epitome of the U. S. Pharmacopeia and National Formulary," and "New and Non-Official Remedies" which includes preparations not listed in the former, to keep himself informed on the rapid advancement in the development of pharmaceuticals. Every prescription for a U.S.P. or N.F. preparation saves money for the patient, discourages self-medication and increases the prestige of the physician. Many people consider the writing of a prescription the most important service rendered by the physician.

If anything is to be done to promote prescription writing and discourage the use of "controlled-name" products, it must be done by acquainting the young physician with the dangers of familiarizing the patient with the medicine he prescribes. As a rule the majority of prescriptions are written by the older physician. The younger man is more interested in pathology, diagnosis or some other phase of medicine. He goes to pathological conferences and staff meetings where every angle of the patient's demise is discussed except his therapy. Therapeutics occupies a small place in the mind of the recent graduate in medicine. He studies pharmacology in his pre-clinical years, and therapeutics and prescription writing are touched on lightly in his hospital work. I have many times asked a senior medical student or an intern to write a prescription for a patient and found that many of them could not even make a start. It is no wonder, then, that they depend upon the advertisements of the drug manufacturer for their knowledge of therapeutics.

The subject calls for a profound study on the part of medical educators. The senior medical student in the crowded curriculum cannot be expected to be conversant with the U. S. Pharmacopeia and his very voluminous text books on pharmacology and therapeutics. All this has been condensed for him in the inexpensive publications of the American Medical Association referred to above. During his last year in school the student can be drilled in the simple elements of prescription writing and encouraged to go behind the prescription case and learn something of the duties of the pharmacist.

The pharmacist prefers to fill prescriptions from official and N. F. preparations instead of selling package medicines. The young physician just beginning practice in a community can have no better friend than the pharmacist, and if he sticks to prescribing and lets the pharmacy do the dispensing he will soon be rewarded by patients referred from the pharmacist. For after all, with some of our population, the community drug store is the first thought in illness.

STUDENT PRECEPTOR SYSTEM IN CLINICAL CLERKSHIP WORK*

By JOHN WALKER MOORE, M.D.,
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It is generally conceded that medical schools cannot expect to produce fully trained physicians in the time allotted for the degree of Doctor of Medicine; they hope at most to equip the students with such a degree of the knowledge, skill and spirit of scientific medicine that they will become active thinkers, observers,

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readers and experimenters in the years to come. The amount of knowledge, skill and spirit of scientific medicine that a medical student gains, depends upon a number of factors, but essentially upon the methods of teaching.

In the majority of our medical schools the student body can be divided into three distinct groups, according to their intellectual ability and attainment. Therefore, a scheme in an institution which exposes equally the upper and lower thirds of a class to medicine is just as unsuccessful in producing trained physicians as a school in which the facilities and resources are unduly limited. Does it seem possible to develop enthusiastic thinkers and readers in our day and age by the use of the time-worn classical didactic lecture, when we know the professional note-taker records every word of the speaker, while two-thirds of the class are dreaming of something far afield from the subject at hand? Would it not be far more profitable for the individual student to utilize the hour in mastering the subject from carefully selected up-to-date texts with the lecturer present as adviser and quiz-master?

Our preclinical teachers have shown us that infinitely better students are produced when the instructor is intimately associated with the individual student. This undoubtedly holds true throughout a physician's training. The undergraduate research assistant and the intern are concrete examples of the advantages to be derived from this close association. Intimate association, I fear, has been lost to a great extent in our student clerkship methods, where the teacher's responsibility tends to end for the individual student as soon as he is assigned to a patient. The clinical clerkship period of instruction is suspended, as it were, between two successful eras of a physician's training, namely, the stage of the fundamental sciences and the stage of hospital internship. How can we in the clinical branches organize our departments to teach the students to apply their knowledge and prepare them with sufficient skill in scientific medicine to pursue either further hospital training or private practice?

The problem is met differently in our various institutions, and there is little or no unanimity of purpose in the assignment of cases, the amount of investigation required, or the supervision of this work. In one school we find that the senior clerkships are confined to the dispensary and the juniors to the house, whereas, in another place the reverse will be true. Furthermore, it is rather a common observation to find that students serving in the house are well supervised, while supervision is woefully neglected in the dispensary; and oftentimes the investigation in the dispensaries is so meager that it is detrimental to the teaching of medicine and the care of patients. Aside from this, most medical schools have a large visiting staff whose responsibilities in some instances are so vague that many of them lose interest and become dead wood, although those with talent could be used in bringing about an adequate supervision of students. In the past six years we have tried out various plans of clerkship work, and find that the student unit system, which is to be presented, meets our requirements as no other system has done.

DIVISION OF CLASSES FOR CLERKSHIPS (*Fig. 1*)

The junior class is divided into two sections, medical and surgical. Two hours a day are given to each clerkship. Rotation of sections is carried out in semester periods.

The senior class is divided into three sections, medical, surgical and specialties. On medicine four hours a day are given to this work. Rotation of sections is carried out in trimester periods.

JUNIOR AND SENIOR CLERKSHIPS IN MEDICAL DIVISION (*Fig. 1*)

The junior medical division is divided into two groups, *A* and *B*. *Group A* is assigned to the wards and *Group B* to the medical dispensary for a quarter of the school year. At the end of this time they exchange places.

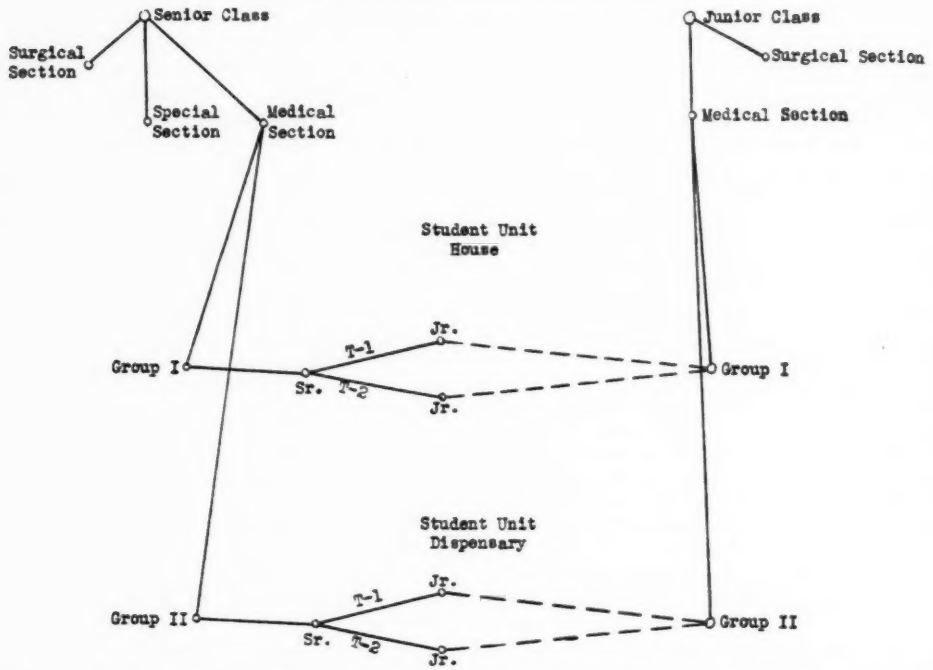
The senior medical division is likewise divided into two groups, *A* and *B*. *Group A* is assigned to wards and *Group B* to the medical dispensary for one-sixth of the school year, at the end of which time they exchange places.

STUDENT UNITS: ASSIGNMENT OF CASES (*Fig. 1*)

The student unit is composed of two juniors and one senior, and such units are in both the house and dispensary. This unit is subdivided for convenience into two teams, one junior and the senior of the unit comprising each team.

Every case that is admitted into the house or dispensary is assigned to a junior student. This student writes the anamnesis, leaving a two-inch margin for the senior student to record the essential abstracts of the junior's history. The senior, together with his junior, makes a physical examination. The former dictates while the

Fig. 1
DIVISION OF JUNIOR AND SENIOR CLASSES FOR CLERKSHIPS



latter records the findings. The two write an independent clinical impression of the case. In addition, the senior student records a recapitulation of the essential features of the case, together with a differential diagnosis.

The senior student in the dispensary has the hour between 8:00 and 9:00 a. m., at which time he has the privilege of consulting references in the library for making a differential diagnosis. On the other hand, the senior student in the house uses a convenient time between 10 and 12 to do the reference work.

The senior student in the house does all the laboratory work on cases assigned to his teams between 8:00 and 9:00 a. m. in the main clinical laboratory, whereas, in the dispensary each student unit rotates through the dispensary laboratory.

SUPERVISION

(1) *In the Wards.*—Each senior and junior student is required to have his case checked not later than 48 hours after the patient is admitted by a member of the house staff. It is the duty of the senior student to arrange with his junior and instructor a convenient time for a bedside conference. The instructor reviews in detail the history, quizzing, criticizing and directing further investigation when necessary. He then enters a grade, which covers aptitude, ability, thoroughness and knowledge. The history so completed becomes a part of the hospital record.

(2) *In the Dispensary.*—As in the house, each pair of junior and senior students is required to have its cases checked by a member of the house or visiting staff.

In order to keep up keen interest among the visiting staff, we assign to each member two teams and a junior house officer. As the visiting man comes on alternate days, there is afforded ample time for the student teams to prepare their cases for checking. While the visiting staff is going over a case in detail with one team, the junior house staff is rounding up the next team for the staff. *Fig. 2* shows the relation of a team to visiting staff and instructors.

The advantages of using students' units in clerkship work may be summed up as follows:

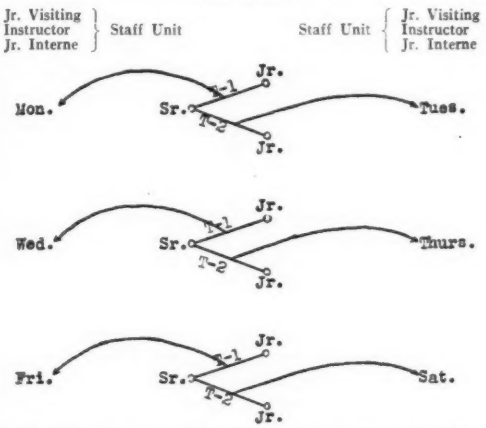
(1) The junior student gets the benefit of almost constant instruction from either the senior

student, house or visiting staff, thereby making him a very valuable man in his senior year.

(2) The senior student, by this arrangement, is enabled to observe and study in detail more cases than if he were assigned cases outright to be worked up. And, he is stimulated to do his best when the responsibility of teaching his fellow student is placed upon him.

Fig. 2

SUPERVISION AND ROTATION OF STUDENT UNIT IN DISPENSARY



A student unit is composed of two teams T (1) and T (2) When T (1) is checked by Visiting Staff A. on Monday

(3) The house and visiting staff, particularly in the dispensary, are likewise stimulated by the arrangement, as they are not likely to be handicapped by incomplete records, haphazard duties, and so on. They are really instructors and are not loaded down with the details which often fall upon them in a crowded dispensary.

(4) The astute instructor can keep his teams alert by playing, so to speak, the junior against the senior student.

(5) The assignment of house officers, in addition to the house and visiting staff, to such teams serves not only as a worthy method of training teachers for the future, but it lightens the load of the house staff, which is a considerable one with this method of teaching.

(6) The diagnostic acumen of the house staff is constantly at stake, for the reason that the student team and the preceptor are assigned to cases on all the wards, and inasmuch as the preceptor goes into greater details of the patient's history with the team than the staff in making his daily ward rounds with the intern, the latter is often made to blush.

(7) Thorough investigation of cases obviously benefits not only the patient, but the hospital as well.

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M. Y. DABNEY, M.D., Editor
EUGENIA B. DABNEY, M.S., Assistant Editor
C. P. LORANZ, Secretary-Manager

Volume XXVI DECEMBER 1933 Number 12

EDITORIAL DEPARTMENT

N R A The Southern Medical Association, through its Secretary-Manager, signed the President's N R A code and put it in force at the earliest effective date, August 1st. The Southern Medical Journal is produced in a printing plant operating under the N R A code. We do our part.

THE RICHMOND MEETING

The hospitable spirit of the old South was revived at Richmond, November 14-17, when the Richmond Academy of Medicine entertained the Southern Medical Association at its twenty-seventh annual meeting. Each guest was made to feel that he particularly was welcomed; and the program of entertainment and instruction was delightful for all.

Colonial days were brought back to mind as one visited the simple little church where Patrick Henry made his famous speech. The White House of the Confederacy and the home of John Marshall, the medical college buildings, the handsome new building of the Richmond Academy of Medicine and the Joseph L. Miller Library, in Richmond, and near by the delightfully reproduced taverns, homes, palace, gardens and the old college, in Williamsburg, and Jamestown, enthralled the visitors.

Hotel arrangements and meeting places were most convenient. The attendance at Richmond was distinctly upon the upgrade. The number of physicians registering was 1,583, with medical students, exhibitors, ladies and miscellaneous making a grand total of 2,471. Compared with physicians' registration in 1932 of 1,247, the attendance of physicians at Richmond showed an increase of twenty-seven per cent over last year. It is to be hoped that this marked jump forward is another example of the upturn in the tide of business which is shortly to restore physicians to the standard of living prior to '28 and '29.

PROGRAM

The General and Public Sessions in Richmond were delightfully presided over by the President, Dr. Irvin Abell, Louisville, Kentucky, whose interesting, erudite and dramatic survey of the life of a great Alabamian begins this issue of the JOURNAL; by the First Vice-President, Dr. James R. Garber, Birmingham, Alabama, and by the General Chairman for the Richmond meeting, Dr. Fred M. Hodges, Richmond. The president of the host society, Dr. Carrington Williams, delivered an address of welcome. The Association enjoyed also the treat of an address of welcome by the Mayor of Richmond, Dr. J. Fulmer Bright, a physician and an orator. Ex-presidents to be seen at the meeting, among many other members who have attended since the founding of the Association, were: Dr. W. W. Crawford, Hattiesburg, Mississippi; Dr. Robert Wilson, Charleston, South Carolina; Dr. Lewellys F. Barker, Baltimore, Maryland; Dr. E. H. Cary, Dallas, Texas; Dr. Seale Harris, Birmingham, Alabama; Dr. W. S. Leathers, Nashville, Tennessee; Dr. J. Shelton Horsley, Richmond, Virginia; Dr. Thomas W. Moore, Huntington, West Virginia; Dr. Felix J. Underwood, Jackson, Mississippi; and Dr. Louis J. Moorman, Oklahoma City, Oklahoma.

The general and section programs and clinics were unusually well attended and enjoyed.

SCIENTIFIC AWARDS AND EXHIBITS

The Association awarded at the Richmond meeting, for the fifth time, its medal for original research. Dr. William deB. MacNider, Kenan Professor of Pharmacology, University of North Carolina, Chapel Hill, North Carolina, was thus honored for original and meritorious research, especially in experimental work.

The scientific exhibits showed a variety of material, carefully prepared and instructive in its nature. The exhibits as a whole were of such excellence that it was difficult for the Committee on Scientific Awards to choose the most outstanding. The awards were made as follows: First, to Dr. Glenville Giddings, Atlanta, Georgia, for his exhibit on child's sleep; Second, to Dr. Thomas D. Moore, Memphis, Tennessee, for his exhibit of a group of serial roentgenograms

illustrating the appearance of the human ureter; and Third, to Dr. Lay Martin, Baltimore, Maryland, for an illustration of his investigations upon the total nitrogen and nitrogen partition in normal and pathologic human stomachs. The exhibit of Dr. Harvey B. Haag and Dr. J. D. Woodley, Medical College of Virginia, Richmond, comparing the cat method and the pigeon method for the standardization of digitalis; of Dr. Seale Harris, Birmingham, Alabama, on epileptiform attacks and hyperinsulinism; of Dr. George B. Lawson, Roanoke, Virginia, on inhibitory action of sulphur on the growth of tubercle bacilli; and of Dr. Paul L. Day, Dr. William C. Langston and Dr. K. W. Cosgrove, Little Rock, Arkansas, on ocular changes in vitamin G deficiency, received honorable mention.

WOMEN'S ENTERTAINMENT

Particular thanks are due to those in charge of the women's functions. The wives of the Richmond physicians gave their time most generously to the guests. The program included among many enjoyable functions a motor trip to historic Williamsburg and luncheon there. The execution of this unique plan, which consumed an entire day and which involved transportation of more than three hundred ladies more than a hundred miles, must have been extremely difficult. The charming hostesses gave no sign of the effort involved. The guests reported it as the most enjoyable entertainment yet provided at a Southern Medical annual meeting.

TROPHIES

In the golf tournament for men the *Washington Post* cup was won by Dr. Jack W. Jones, Atlanta, Georgia; the *Dallas Morning News* cup by Dr. A. A. Creecy, Newport News, Virginia; and the Schwarzschild cup, a new trophy in play at Richmond for the first time, by Dr. J. J. Gable, Norman, Oklahoma. In the tournament for ladies the *Memphis Appeal* trophy was won for the second time in succession by Mrs. C. R. McCubbin, Kansas City, Missouri. Mrs. T. B. Washington, Richmond, won the trophy for the low net score.

In the trap shooting tournament the three major trophies, a leg on the *Atlanta Journal* bowl, a leg on the McKesson-Doster-Northington microscope, and the Richmond Academy of Medicine trophy, were won by Dr. W. E. Fallis, Louisville, Kentucky. Dr. L. G. Richards, Roanoke, Virginia, was the runner-up, originally tying with Dr. Fallis but losing to him in the shoot-off.

MCGUIRE MONUMENT

By order of the Association, the President, Dr. Abell, with appropriate remarks, placed a wreath on the monument of Dr. Hunter Holmes McGuire in the Capitol grounds at Richmond. Dr. McGuire in his life time was President of the American Medical Association, the American Surgical Association, founded the University College of Medicine, Richmond, now the Medical College of Virginia, was Medical Director, Jackson's Corps, Army of Northern Virginia; and was the father of Dr. Stuart McGuire, Richmond, an honored past-president of the Southern Medical Association.

OFFICERS

The new general officers for 1933-1934 are: President, Dr. H. Leslie Moore, Dallas, Texas; First Vice-President, Dr. Fred M. Hodges, Richmond, Virginia; Second Vice-President, Dr. Thomas A. Groover, Washington, D. C.; Chairman of Council, Dr. Frank K. Boland, Atlanta, Georgia; Chairman of Board of Trustees, Dr. Seale Harris, Birmingham, Alabama. The complete roster of the officers of the sections and of the organizations meeting conjointly will appear in the January JOURNAL.

NEXT MEETING

The Council accepted the invitation of the Bexar County Medical Society, San Antonio, Texas, to hold the 1934 meeting in San Antonio.

And after San Antonio, Mexico. The Association management has already announced an official all-expense post-convention tour to old Mexico following the San Antonio meeting.

PELLAGRA, ANEMIA, AND BLACK TONGUE

Inflammation of the mouth and tongue and diarrhea are characteristic of several diseases in human beings, among them sprue, pellagra, and certain anemias. The local conditions sometimes disappear spontaneously, and sometimes precede the development of severe systemic disturbances.

Black tongue in dogs may be produced by the same diet on which human pellagra develops, and the two conditions are relieved by the same treatment. Goldberger and his coworkers considered black tongue of dogs and pellagra of human beings identical.[1]

1. Rhoads, C. P.; and Miller, D. K.: The Production in Dogs of Chronic Black Tongue with Anemia. Jour. Exper. Med., 58: 585, Nov., 1933.

Rhoads and Miller,[1] of the Rockefeller Institute, have recently reinvestigated the subject of black tongue in dogs. In their studies they have included the blood picture, which in many respects suggests that of pernicious anemia. Their dogs received a diet deficient particularly in vitamin G, sometimes believed to be the pellagra-preventive vitamin. The controls received the same diet plus a liver extract active in pernicous anemia and known to be rich in vitamin G. They remained in excellent health. The experimental animals developed, though rather irregularly, an atrophic glossitis, diarrhea, weight loss, and a macrocytic anemic. The number of red cells and quantity of hemoglobin in the blood were reduced, while the size of the red cells and color index rose. The bone marrow resembled that of sprue and pernicious anemia.

There was much individual variation in the animals' response to the dietary deficiency and to therapy. Spontaneous remissions were common. It was expected that achlorhydria would be a frequent contributing symptom, but it appeared only terminally. From the diarrheal stools, a yeast-like organism was usually cultivated, which disappeared during remissions and was not seen in the controls. Relief of symptoms was generally obtained by feeding liver extract or fresh meat. The animals were not benefited by parenteral injections of liver extract, which are markedly effective in human pernicious anemia.

The demonstration that sore mouth and tongue, macrocytic anemia without achlorhydria, and diarrhea, with appearance of a new microorganism in the feces, may be produced by vitamin G deficiency and may be relieved by a food which is potent in human pernicious anemia, is of some moment. Diarrhea is generally thought of as bacterial in origin. During this period of alarm over the appearance of an unusual number of cases of amebic dysentery, *Endamoeba histolytica* may be sought in many cases of diarrhea. The finding of yeasts in the stool might be taken as an indication for antiseptic instead of dietary treatment. In the syndrome described by Rhoads and Miller, dietary measures corrected an abnormal intestinal flora.

The dog is a more complex animal, with probably greater tissue reserves, than is the rat, the customary subject of nutritional experiments. It is, therefore, to be expected that the dog's response to a given dietary deficiency will be less constant than the rat's, and that human reactions will be still more variable. A single dietary factor cannot yet be said to be responsible for cause or arrest of human pernicious anemia, though there are many reasons to believe that it is a deficiency disease.

Various syndromes in the albino rat have been reported to follow vitamin G deficiency. Among these is a pellagra-like dermatitis, with diarrhea and weight loss.[1] A reported eye symptom[2] is progressive cataract.

GLEANINGS FROM RECENT JOURNALS

Amebic Dysentery.—In the last several years Chicago, one of the largest cities in America, has reported about one case per month of amebic dysentery. From 8 to 10 per cent of the population of the country as a whole are said to be infected with *Endamoeba histolytica*.[3]

According to Craig,[4] there are no healthy carriers of amebae. In March of this year, studies upon 1,000 supposedly healthy inmates of a California prison showed that nearly 10 per cent carried this pathogenic organism in their stools.[5] More than half the infected prisoners had experienced notable gastro-intestinal disturbances; about 39 had no complaints of this character. Most of the symptomless carriers were men under thirty, of a type which pays little attention to a mild illness.

Upon the appearance of *E. histolytica* infection in severe form among several men who had been guests of a certain hotel in Chicago and its environs during the past summer, with deaths of prominent persons in distant parts of the country, an investigation of the individuals engaged in food handling there was begun. Three hundred and sixty-four such persons from a single hotel were examined early in September. Fifteen active cases of the disease and 11 carriers of *E. histolytica* were detected.

Late in October a second examination was made of those previously found negative, and of other employes of the hotel. Sixty food handlers and 100 non-food handlers this time showed amebae in the stool.

---

1. Thatcher, H. S.; Sure, Barnett; and Walker, D. J.: Preliminary Report on the Pathological Changes in the Albino Rat Suffering from Vitamin G Deficiency. Sou. Med. Jour., 23:143, 1930.

2. Day, P. L.; and Langston, W. C.: Nutritional Cataract in the Norway Rat. Sou. Med. Jour., 26:128, 1933.

3. Bundesen, H. N.; Rawlings, I. D.; and Fishbein, W. I.: The Health Hazard of Amebic Dysentery. J.A.M.A., 101:1636, Nov. 18, 1933.

4. Craig, C. F.: The Amebiasis Problem. J.A.M.A., 98:1615, 1932. Quoted by 5.

5. Johnstone, H. G.; David, N. A.; and Reed, A. F.: A Protozoal Survey. J.A.M.A., 100:728, March 11, 1933.

The publicity given the outbreak will serve to call physicians' attention to a well known disease which is usually called tropical. From the information which has been obtained, many undiagnosed cases are probably to be found in the country at large. Wherever a sudden painful diarrhea is reported ameba is to be suspected and a laboratory examination is advisable. Treatment is specific. In persons who handle foods, the carrier condition is particularly dangerous.

If the disease is as prevalent as morbidity statistics indicate, and as readily contracted, some further explanation is necessary as to why outbreaks are not more common.

If sporadic cases of dysentery continue to show a derivation from public eating places, it is probable that steps should be taken toward compulsory examination of the feces of persons engaged in food distribution. This could hardly be attempted unless public health budgets reverse their downward trend.

Immune Serum in Poliomyelitis.—Considerable effort has been expended in the attempt to secure immune serum for the treatment of infantile paralysis. In the 1931 epidemic of poliomyelitis in New York and New England, however, sera administered in the preparalytic stage apparently did not prevent or ameliorate the disease. Kramer[1] has attempted to explain this rather unexpected failure.

He inoculated each of six monkeys on three successive days with the virus. The fourth day after beginning the inoculations, and on each successive day thereafter for six days, one of the animals was killed and the brain and spinal cord removed *in toto* for examination. This gave a series of animals in very early stages of the disease. The first two animals had no elevation of temperature and no evidence of illness. The third had a slight elevation of temperature, but no signs of illness. Only the last animal, killed nine days after the commencement of inoculations, had any paralysis.

The brain and cord, however, showed progressive involvement of the central nervous system in all six monkeys. There was involvement thus, as early as the third day following the first intranasal instillation, two days before the appearance of the temperature and five days before any paralysis.

1. Kramer, S. D.: and Parker, G. C.: Ex erimental Poliomyelitis: Evidence of Early Involvement of the Central Nervous System. Proc. Soc. Exper. Biol. & Med., 30:1416, June, 1933.

The results, Kramer says, cast doubt on the therapeutic value of immune sera in preparalytic poliomyelitis, help explain the failure of immune sera to modify the experimental disease, and offer an explanation of the indifferent results of controlled series of human cases in 1931.

Death of Calmette.—Modern bacteriology began in France with Louis Pasteur. Pasteur's early studies on fermentation and putrefaction, his discovery that certain bacterial diseases could be prevented by vaccination, began a new health era for the world. Later, the work on immune sera of Bordet, a Belgian, and Gengou, a Frenchman, gave the principle of the most delicately complicated and the most used laboratory test in medicine, the Wassermann reaction. Of more recent fame in French bacteriology are d'Herelle, student of the bacteriophage, and Calmette, whose tuberculosis vaccine, B C G, is known all over the world. The *Bacillus Calmette-Guerin,* a living attenuated strain of the tubercle bacillus, has been employed in many countries for preventive inoculations against tuberculosis. In Bulgaria, to mention only one country, it is given to 95 per cent of the new born infants.[1] In this country its use is endorsed by such men as Dr. William H. Park,[2] of the Department of Health of New York City, and in the South by Dr. William Litterer,[3] of the Department of Health of Tennessee. The death of Calmette in Paris, of peritonitis,[1] late in October, cuts short the work of a distinguished student.

Dr. Calmette was nominally Assistant Director of the Pasteur Institute, virtually its Director. His investigations on B C G began before the War. The vaccine was supplied free to physicians and midwives from 1924 on[1]. The Lubeck (Germany) disaster of 1930, in which nearly one hundred vaccinated new born babies died of generalized tuberculosis,[4] was a great grief to the originator of the method, who never doubted that a technical error in the preparation of the vaccine, or an accidental substitution of virulent tubercle bacilli, caused the catastrophe.

1. Calmette, Charles Albert: Brit. Med. Jour., p. 838, Nov. 4, 1933.

2. Park, William H.: Kereszturi, C.: and Mishulow L.: Effect of Vaccination with B C G on Children from Tuberculous Families. J.A.M.A., 101:1619, Nov. 18, 1933.

3. Litterer, Wm.: Experimental Studies on Calmette's B C G Vaccine. Sou. Med. Jour., 22:955, 1929.

4. Editorial, The Lubeck Catastrophe. Sou. Med. Jour., 24: 1126, 1931.

TWENTY-FIVE YEARS AGO

From Journals of 1908

Prevention of Tropical Liver Abscess.—"Rogers urges the reinstatement of the ipecacuanha treatment, 30 grains (1.95) or in less acute cases, 20 grains (1.30) of chloral hydrate. No food or fluid should be given for three hours before or after the dose. He compares the rejection of the ipecac treatment to the substitution early in the Nineteenth Century of venesection and salivation for the empirical quinine treatment, which was not restored to use again till 1847. Amebic ulcer of the great bowel is readily curable by ipecacuanha and on this ulcer, Rogers holds, the liver abscess depends."[1]

Publicity.—"The Wilson County (Illinois) Medical Society, at a recent meeting, adopted a resolution requesting all newspapers in the county to refrain from mentioning physicians' names in connection with medical or surgical cases."[2]

Medicolegal.—"The Supreme Court of Missouri . . . says that in the personal injury case of Chlanda vs. St. Louis Transit Co., where the whole trend of the plaintiff's case was to the effect that she could not walk without artificial aid, a physician was not permitted to testify that on a certain date, when he called at her residence relative to a bill for services in her behalf, he saw her walking without the use of crutches, and saw her go up a flight of stairs without their use. . . . This was error."[3]

Treatment of Gastric Ulcer.—"In treating an ulcer it is important to avoid all articles of diet liable to promote peristalsis. For this reason also the food should be given in very small quantities; if there is much thirst water can be supplied by the rectum. Thesen allows nothing but lukewarm milk at first, a tablespoonful at a time, to a total of 250 c. c. (8 ounces) during the day, increasing an ounce each day during the first week; with one raw egg the second day, two the third, three the fourth, and so on, with nothing but the milk and raw eggs until the seventh day. At the same time he gives 10 gm. (150 grains) bismuth daily, believing that it diffuses into the lymphatics and arrests the lymphangitis. . . . The combination of olive oil and bismuth generally proves more effective than either alone."[4]

Eczema.—Dr. William Allen Pusey:[5] "Eczema is not a definite disease. It is not a pathologic entity. Eczema is simply a dermatitis—a reaction in the skin produced by irritation of various sorts, which may be both local and constitutional or either. As a simple dermatitis it may be produced by many causes, but as soon as we discover a specific form of dermatitis, like scabies or seborrheic dermatitis, we eliminate it from the group of conditions that we call eczema."

Dr. John A. Fordyce:[5] "The more I study eczema the more convinced I am that in the great majority of cases the causes of the disease are external. I teach my students that eczema is a reaction in the skin; that it is often impossible to differentiate the histologic features of a dermatitis produced by rhus or iodoform or by other chemical or mechanical irritants from a typical case of eczema in which we are unable to find the etiologic factor. We know that certain external agents will produce eczema. We theorize and say that certain internal causes may produce it, but we cannot prove it."

1. Rogers, L.: Tropical or Amebic Abscess of the Liver as a Preventable Disease. Med. Press and Circular, London, Oct. 28, 1908. Abstr. J.A.M.A., 51:1907. 1908.
2. Medical News. Idem. p. 1877.
3. Idem, p. 1813.
4. Idem, p. 1828.
5. Idem, p. 1832.

Book Reviews

A Textbook of Surgery. By John Homans, M.D., Assistant Professor of Surgery. 1231 pages, illustrated. 2nd Edition. Springfield, Illinois: Charles C. Thomas, publisher, 1932. Cloth, $8.00.

This is an unusual textbook of surgery. It preserves the methods of the lecture hall, devoting most of the pages to diagnosis and very little to treatment, except in the chapter on bone injuries. Lack of fullness in the previous edition has been rectified by the addition of many new items. The chapter on anesthesia is the largest single increase in subject matter; it is well written and to the point, but caudal anesthesia is neglected. The book is further augmented by paragraphs about hyperinsulinism, circumcision, coccidoidal granuloma, Paget's disease, aspiration of the pericardium, extrauterine pregnancy, parathyroid adenomas and Torula infection. In the description of tonsillectomy it is stated "if bleeding spots are left, they may be caught with stitches." No mention is made of the various other methods of hemostasis as tannic acid, pressure and crushing of the tissue, which are more often used and most often successful. Vaccines in the treatment of erysipelas are given no consideration. The book is recommended for its individuality and as a treatise on the diagnosis of the more important surgical conditions.

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Book Reviews

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Public Health Nursing in Industry. Prepared for the National Organization for Public Health Nursing. By Violet H. Hodgson, R.N., Assistant Director, National Organization for Public Health Nursing. 249 pages. New York: The Macmillan Company, 1933. Cloth, $1.75.

This text outlines some of the opportunities that a nurse might take in making herself more valuable in industrial work. The book deals with the organization of the medical service, then the differnt activities that the nurse may be expected to perform or supervise. Proper stress is given to the fact that a physician must be responsible for her work. Various forms that may be used in keeping records are given. While the importance and activities of the nurse are slightly overemphasized, this book will be of use to the nurse, doctor and public relations director.

Obstetrical Nursing. A Text-Book on the Nursing Care of the Expectant Mother, The Woman in Labor, The Young Mother and Her Baby. By Carolyn Conant Van Blarcom, R.N., Formerly Assistant Superintendent and Instructor in Obstetrical Nursing and the Care of Infants and Children at the Johns Hopkins Hospital Training School for Nurses. Third Edition. 651 pages, with 251 illustrations and 12 charts. New York: The Macmillan Company, 1933. Cloth, $3.00.

This popular text is now in its third edition. This revision pays particular attention to the simplification of technic so that hospital methods may become more easily adapted to home deliveries. Social service and mental hygiene as related to pregnancy are introduced. Figures 40 and 167 are exactly the same, so that one would appear superfluous. The discussion of twilight sleep takes up analgesic agents other than the morphine, scapolamine, magnesium sulphate technic of Stienbuckel. This should be clarified. An excellent book.

The Science of Radiology. Edited by Otto Glasser, Ph.D. 500 pages, 110 illustrations and 1,400 references. Bound in Fabrikoid PX Linen Embossed. Springfield, Illinois: Charles C. Thomas, 1933. Price, $4.50 postpaid.

This book is the result of work done by the Committee on History and Education of the American Congress of Radiology, with Dr. Byron H. Jackson as Chairman. Dr. Jackson had associated with him on this Committee Dr. Otto Glasser, Editor, who had already published a book, "Wilhelm Conrad Roentgen and the History of the Roentgen Rays."

This book sets forth the outstanding features developed in the science of radiology and radium from the time of their discovery to 1933; also a story of the lives of Roentgen and Pierre and Marie Curie.

All branches of science which have been benefited by these discoveries are represented in this volume, and each chapter is written by an accepted authority.

In addition to being a store of knowledge to the specialist in radiology, medicine, physics, biology and chemistry, the book is a delightful literary and historical presentation.

The Common Cold, with Special Reference to the Part Played by Streptococci, Pneumococci, and Other Organisms. Volume VIII of Annals of the Pickett-Thomson Research Laboratory. By D. and R. Thomson. 699 pages, illustrated. London: Bailliere, Tindall & Cox. In America, Baltimore: The Williams & Wilkins Company, 1932.

This atlas on the common cold discusses the most prevalent of diseases that is responsible for more lost time than any other disorder and which is probably more neglected than cared for. The writers show that the average person in the United States has two colds per year with greater incidence in the male. The structure of the nose is carefully described; the physiology has not yet been satisfactorily worked out. It has been shown that the cilia of the nose tend to sweep it clean and the cavity is capable of self-sterilization. The most common complication of the common cold is sinusitis. This leads to a discussion of the anatomy and physiology of the sinuses. The statement, "The ethmoids appear immediately after birth and reach the adult size at about the age of seven, when the frontals began to appear as off-shoots of the ethmoid cells into the frontal bones," can be questioned, as the ethmoids have often been shown much earlier in roentgenograms.

Various bacteriologists have investigated the flora of the normal nasal cavity, mouth and sinuses. Most of their reports are in practical agreement. The authors have drawn the following general conclusions concerning the flora of the normal throat: (a) the most common organisms are streptococci of the *viridans* type; (b) the next most common organisms are the non-methemoglobin-forming streptococci of the American writers; (c) the third most common are the gram-negative cocci of the *M. catarrhalis* group; (d) flora will vary in the same individual at different times; (e) other organisms are scarce. The physiology of the trachea, bronchi and lung alveoli are next described.

The common cold is defined as "a generic term which covers a whole host of the specific catarrhal infections of the mucous membrane of the respiratory tract." Further, the writers hold that the common cold is not a single definite disease. They think that colds and influenza are often confused, mild influenza being termed a cold and *vice versa*, but they also admit that there is no fool-proof method of detecting either. Then some colds are thought to be of an allergic nature rather than bacterial.

As early as 1873 a micrococcus was described as the cause of coryza by Hüter. Since, other organisms have been pointed out as the causative agents. The work of the various investigators is grouped according to their findings. The authors discuss these results in relation to their own research. They state: "Recent observers have concluded that there is no difference in the bacterial flora of the respiratory tract during health and during colds. We, on the other hand, as a result of our investigations, are in agreement with the earlier observers who believe in the plurality of colds caused primarily by several different varieties of bacteria."

The next sections discuss the role of the pneumococci, *M. catarrhalis*, streptococci, Pfeiffer's bacillus, *B. coryzae segmentosus*, Friedlander's bacillus, miscellaneous bacteria and filter-passing virus in colds, tonsillitis and bronchitis. The parts played by chilling, bad ventilation, fatigue, clothing and other factors which may predispose receive full attention. In each section existing data is given due prominence and comments based on the authors' work are expressed.

The complications of the common cold are many and varied. Most of them are extensions to other parts of the respiratory tract. Excellent descriptions are given of each of these, especially of sinusitis, which in turn has its own series of complications. A chapter is devoted to treatment, including the prevention and treatment of colds by vaccines. The final pages consist of over fifty fine photographs of culture plates that bear out the assertions of the writers.

This is a most extensive and complete review of the present knowledge of the common cold. Over 2,000 papers have been abstracted by the writers in the preparation of this volume. In addition they have made careful investigations in their own laboratory for the past fifteen years. The research worker will be greatly aided by this collection of facts and the practicing physician will be helped in his fight against this common disease.

Nutrition. By Graham Lusk, ScD., M.D., LL.D., Late Professor of Physiology, Cornell University Medical College, N. Y.; Former Member, Royal Society; Corresponding Member, Preussische Akademie der Wissenschaften. 142 pages with 13 illustrations. New York: Paul B. Hoeber, Inc., 1933. Cloth, $1.50.

This monograph on the history of nutrition was written by one of the great leaders of modern thought upon the subject shortly before his death. The foundations of the present day science in the philosophy of the ancient and medieval world and the physics and chemistry of the post-renaissance period occupy most of the book. The modern phase of nutrition is taken up briefly in a final chapter which deals largely with the studies of Rubner on metabolism. It is a brief survey of five thousand years.

Teaching Methods in Medicine. The Application of the Philosophy of Contemporary Education to Medical Schools. By William Duncan Reid, A.B., M.D., F.A.C.P., Assistant Professor of Cardiology, Boston University School of Medicine; Member, Evans Memorial, Research Division of the Massachusetts Memorial Hospitals. 111 pages. Dr. William Duncan Reid, 510 Commonwealth Avenue, Boston, Mass. Cloth, $1.00.

This is a small book consisting of nine short chapters, which is well worth the thought of the medical educator and the profession. In the first chapter is developed the idea that the teacher of medicine should be trained in education methods. In the second chapter the medical curriculum is pictured as overcrowded and containing a great deal of material that is useless to the future medico. Certain questions are set forth by the writer to judge the effectiveness of the teaching and a short discussion is given of the psychology of learning. In teaching medicine the author discusses various "technics," labeling them major, minor and general. These give the reader something tangible to work with. Three steps in effective drill technic are emphasized. These are: reduction of the material to a sizeable load, organization of the material and teaching for mastery. The final chapter gives selected topics as examples of correct methods of interesting students in a subject.

Textbook of Physical Therapy. By Heinrich F. Wolf, M.D., Chief of the Department of Physical Therapy, Mt. Sinai Hospital Dispensary, New York, with a foreword by Lewellys F. Barker, M.D., LL.D., Professor Emeritus of Medicine, Johns Hopkins University School of Medicine, Baltimore. 409 pages, illustrated. New York: D. Appleton-Century Company, Inc., 1933. Cloth, $5.50.

This book differs from the usual text on physical therapy, greater attention being given to diagnosis rather than treatment. The instructions are much simpler than usual. Dosage and length of treatment are based on physiological reaction instead of a certain number of milliamperes for a definite length of time. Conditions which are incurable are not discussed and if treatment is not indicated the writer says so.

The diagnostic value of physical therapy procedures are first discussed. In this chapter Dr. Wolf includes many cases from his personal experience. The descriptions of the different forms of physical therapy and their uses is very complete. Among them are electrotherapy, electrodiagnosis, heat and light, massage, mechanotherapy, relaxation, Bier's passive hyperemia, and hydrotherapy.

The second part takes up the practice of physical therapeutics. The chapter on fractures is an excellent exposition of detailed methods in the handling of each variety of break. The diseases of the other systems are given full attention. Some of the illustrations in this section are crude drawings which could be improved upon artistically. The entire text is a common sense application of practical physical therapeutic methods which have given results in the author's hands.

A Study of Rural Public Health Service. By Allen W. Freeman, M.D., Editor. 236 pages. New York: The Commonwealth Fund, 1933. Cloth, $2.50.

A very accurate survey of health work in rural communities. Forty-six counties and provinces in the United States and Canada were selected for detailed examination. These were visited for several weeks, data obtained first hand and tabulated. Additional information was derived from questionnaires answered by 337 full-time health units in twenty-eight states. From the combined data much information of value has been made into tables for this book. The greatest importance of this book lies in the establishing of a standard for future public health efforts.

American and Canadian Hospitals. A Reference Book Giving Historical, Statistical and Other Information on the Hospitals and Allied Institutions of the United States and Possessions, and the Dominion of Canada. Edited by James Clark Fifield with the Cooperation of the American Hospital Association. 1560 pages. Minneapolis: Midwest Publishers Company, 1933. Cloth, $10.00.

This directory contains information about all the accredited hospitals in the United States, its possessions and Canada. In most cases this consists of the name of the founder, present operators, types of cases accepted, rates and the average number of patients treated last year. In addition are a number of historical sketches of all the national organizations in the hospital field. The data in this book is authoritative and will prove a boon to the hospital executive who wishes to compare costs or the practitioner who finds it necessary to refer patients to a distant hospital.

Inherited Abnormalities of the Skin and Its Appendages. By E. A. Cockayne, D.M., F.R.C.P., Physician to the Middlesex Hospital; Physician to Out-Patients, Hospital for Sick Children, Great Ormond Street, London, England. 394 pages. New York: Oxford University Press, 1933. Cloth, $8.00.

The practical application of genetics to the breeding of the human race waits upon social and political maturity not yet attained. But there are earnest thinkers who believe no great progress will ever be made without it.

The volume here presented to the public and to the profession by the Oxford Press is a worthy forerunner of similar works in different fields of medicine that are sure to follow in years to come. The genetics of the defects of the skin, teeth, hair and nails is treated in exhaustive and scholarly fashion within the limits of the available material. The literature of the world has been combed. An unbelievable labor, obviously a labor of love, has been expended upon the task. And that task has been accomplished with a poised judgment and finessee beyond adverse criticism.

For the medical man interested in the skin it holds especial appeal. For the student of biology, the anthropologist, the delver in social problems it is a well of facts. It is a good book, destined to find solid appreciation with those discerning connoisseurs who, in a mad age of hurry, regret the many bad books feverishly thrown together.

Bone Growth in Health and Disease. By H. A. Harris D.Sc. (Lond.), M.B., B.S. (Lond.), B.Sc. (Wales), M.R.C.S., M.R.C.P., Professor of Clinical Anatomy, University College and University College Hospital, London. 248 pages, illustrated. New York: Oxford University Press, 1933.

The author reviews in detail the histology, physiology and chemistry of bone growth from the intrauterine period to the adult stage: first, in health and later in different diseases. He stresses the effect of osteomyelitis, rickets, syphilis, tuberculosis and other diseases on the growth of bone and devotes considerable space to primary perversions of bone growth such as achondroplasia. He concludes that there must be a complete revision of the normal and pathological histology of cartilage and bone in terms of glycogen, phosphates and other substances whose role is as yet unknown. This chemical approach should lead to a clearer conception of biological processes and open a new field to elucidate the problems of bone growth in health and disease.

Southern Medical News

The American Public Health Association will hold its sixty-third annual meeting in Pasadena, California, the week of September 3, 1934.

Dr. Ross V. Patterson, Dean of the Jefferson Medical College of Philadelphia, was elected President and Chairman of the Executive Council of the Association of American Medical Colleges at the annual meeting in Rochester, Minnesota, recently.

ALABAMA

Dr. J. M. Miller has moved from Huntsville to Clarksville, Tennesseee, to practice diseases of the eye, ear, nose and throat.

Dr. Ralph D. Neal, formerly of Grove Hill, Health Officer of Clarke County, has been appointed to succeed Dr. Thomas E. Tucker, resigned, as Health Officer of Monroe County.

Dr. Samuel Ralph Terhune and Miss Pauline Carolyn Veitch, both of Birmingham, were married in October.

Dr. Emmett B. Frazer, Mobile, and Miss Mary Jane Knight were married recently.

Dr. Thomas Henry Blake, Sheffield, and Miss Laura Lee Peaster were married recently.

DEATHS

Dr. William Sloan Geddes, Birmingham, aged 44, died recently in a Denver, Colorado, hospital.

Dr. Earl Kinion Wheelis, Blanton, aged 44, died July 13.

Dr. Nathaniel Aldridge Barrett, Decatur, aged 72, died September 12 of cerebral softening and hypostatic pneumonia.

Dr. Henry Herbert White, Enterprise, aged 52, died October 1 of injuries received in an automobile accident.

ARKANSAS

The First Councilor District Medical Society which met at Paragould in October elected the following officers for the coming year: Dr. J. T. Altman, Jonesboro, President; and Dr. Ira Ellis, Monette, Vice-President. Dr. F. D. Smith, Blytheville, Secretary, will continue to serve until the spring meeting which will be held at Jonesboro.

The Second Councilor District Medical Society met at Batesville in October and elected the following officers for the coming year: Dr. S. J. Albright, Searcy, President; Dr. J. T. Matthews, Heber Springs, Vice-President; and Dr. O. J. T. Johnston, Batesville, Secretary.

The Third Councilor District Medical Society at a recent meeting elected the following officers for the coming year: Dr. H. H. Rightor, Helena, President; Dr. T. G. Porter, Hazen, Vice-President; and Dr. J. O. Rush, Forrest City, Secretary.

The Tri-County Medical Society composed of Union, Ouachita and Columbia Counties held a dinner meeting in Camden in October.

The Arkansas Tuberculosis Association held its twenty-fifth annual meeting at Little Rock in October.

The Third Clinical Conference of the Staffs of the Leo N. Levi Memorial Hospital and the Charles Steinberg Clinic, Hot Springs National Park, was attended by over one hundred physicians.

Dr. Ewell I. Thompson has opened an office in the Donaghey Building, Little Rock, with practice limited to dermatology.

Dr. R. Q. Patterson, Little Rock, has moved into new offices at 213 West Second Street.

DEATHS

Dr. George Littleton Wilson, Banks, aged 63, died May 8 in Houston, Texas, of heart disease.

Dr. A. P. Owens, Texarkana, aged 85, died October 16.

DISTRICT OF COLUMBIA

The Atlantic Dermatological Conference met in Washington November 18 under the auspices of the Washington-Baltimore Dermatological Society, with headquarters at the Mayflower Hotel, this being a meeting of the dermatological societies of Washington, Baltimore, Philadelphia, New York, New England and Canada. Dr. Lee McCarthy, Washington, was General Chairman for the Conference.

The George M. Kober Medical Society met in Washington October 16 for its first autumn session.

FLORIDA

The Pinellas County Medical Society at its annual meeting at St. Petersburg in October elected the following officers for the coming year: Dr. C. C. Rudolph, President; Dr. George M. Lockner, First Vice-President; Dr. N. W. Gable, Jr., Second Vice-President; Dr. O. O. Feaster, Secretary; and Dr. W. C. McConnell, Treasurer; all of St. Petersburg.

Dr. W. M. Rowlett, Tampa, visited clinics in Chicago, New York and Boston recently.

Dr. E. J. Melville, St. Petersburg, has returned from Europe where he took special clinics and lectures at Vienna.

Dr. J. D. Bell, Pensacola, is doing post-graduate work in obstetrics in Chicago.

Dr. L. J. Netto, West Palm Beach, attended clinics at Vanderbilt Hospital, Nashville, Tennessee, during September.

Dr. Rosa L. Sullivay, Pensacola, attended clinics in Chicago in September.

Dr. Leroy A. Wylie, St. Petersburg, has returned from Europe where he did special work at the Edinburg Infirmary and in the American Hospital in Paris.

Dr. Eugene G. Peek, Ocala, has been reappointed to the State Board of Medical Examiners.

Dr. H. Mason Smith and Dr. E. W. Bitzer, Tampa, recently attended clinics at Rochester, Minnesota.

Dr. John S. Helms, Jr., Tampa, at a reorganization meeting recently of the Seminole Indian Association was elected President; and Dr. Herbert R. Mills, Tampa, was elected Director of the organization.

Dr. W. J. Barge, Miami, has moved into new offices in the Ingraham Building.

Dr. J. C. Pate, Tampa, recently visited surgical clinics in New York and Boston.

Dr. Shaler Richardson, Jacksonville, recently visited clinics in Boston, Chicago and New York, and while on this trip attended the American Academy of Ophthalmology and a meeting of state association secretaries.

Dr. J. T. Bradshaw, San Antonio, attended post-graduate clinics in Chicago recently.

Dr. Maximilian Stern, formerly of DeLand, has become associated with Dr. J. N. Fogarty, Daytona Beach, with practice limited to urology.

Dr. George L. Cook, Tampa, has returned from visiting clinics in Chicago and Rochester.

Dr. Bricey Milton Rhodes and Mrs. Eunice Bricey Burns Thornton, both of Tallahassee, were married recently.

Dr. George M. Dawson, West Palm Beach, and Miss Louise King were married recently.

Dr. Oliver W. Jenkins and Miss Mary Ellen Bailey, both of Chattahoochee, were married recently.

DEATHS

Dr. James Lee Bell, Malone, aged 52, died September 8 of cerebral hemorrhage.

Dr. John Adams Van Valzah, Daytona Beach, aged 66, died July 27 of myocarditis and nephritis.

Dr. Foster P. Key, Green Cove Springs, aged 60, died September 6 of angina pectoris.

Dr. John Lauchlan Martin, Miami Beach, aged 57, died September 9 of angina pectoris.

Dr. Willie R. Booth, Campbellton, aged 69, died September 11 of strangulated hernia.

GEORGIA

The Georgia Urological Association met in Savannah October 26 for its semi-annual session.

The Jackson-Barrow Counties Medical Society and the Walton County Medical Society met at Winder on October 2 for a joint session.

The Ware County Hospital at Waycross held its third quarterly clinic on September 26.

The Grady Hospital, Atlanta, held its regular staff meeting on September 12.

Dr. John H. Snoke, formerly of Landsdowne, Pennsylvania, is the newly elected Superintendent of the University Hospital, Augusta.

Dr. Charles L. Hicks and Dr. William C. Thompson announce their opening of the Hicks-Thompson Sanitarium in the Dublin Clinic Building, Dublin.

The Walker County Medical Society and the State Board of Health in cooperation held chest clinics during October at Chickamauga, Rossville and LaFayette.

Dr. and Mrs. O. N. Harden, Cornelia, were hosts recently to members of the Habersham County Medical Society and Auxiliary.

The Tri Medical Society, composed of Calhoun, Early and Miller Counties, held their September meeting at Blakely.

Members of the Ocmulgee Medical Society (Bleckley, Dodge and Pulaski Counties) met recently to organize a Credit Bureau.

Dr. I. W. Irvin and Dr. W. S. Cook, Albany; Dr. F. L. Lewis and Dr. D. P. Luke, Camilla; and Dr. C. W. Twitty, Elmodel, recently conducted a pre-school clinic at which 271 children were examined.

Dr. and Mrs. C. C. Aven, Atlanta, were hosts recently to the staff of the Atlanta Tuberculosis Association at dinner.

Dr. Cleveland Thompson, Millen, recently entertained at dinner physicians of Waynesboro, Vidalia, Sylvania, Midville, Sardis and Vidette.

Dr. J. Harris Dew has opened offices at 126 Forrest Avenue, N. E., Atlanta, where he will be associated with Dr. G. Pope Huguley.

Dr. W. L. Pomeroy and Dr. H. A. Seaman, Waycross, were hosts recently to members of the Ware County Medical Society at supper.

Continued on page 28

FREE SAMPLES
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is offered in convenient sizes. The powdered yeast can be easily blended with other foods or medicines.

Vitamine-B was discovered in the Yale Medical School Laboratories, by Drs. T. B. Osborne, Lafayette B. Mendel and associates. That same year, The Harris Laboratories were founded to manufacture Yeast Vitamine-Harris Tablets.

They were the first Yeast Vitamine-B Tablets made in America and still are the only *concentrated* Yeast Vitamine-B Tablet for clinical use.

There is still no other Vitamine-B Tablet of this concentration and potency.

They have been successfully used and prescribed in:

ANEMIA · HERPES · INFECTION · PELLAGRA
INFANT & CHILD FEEDING · ULCERS
ARTHRITIS · DIABETES · RESTRICTED DIETS

THE HARRIS LABORATORIES

TUCKAHOE NEW YORK

Continued from page 1098

Dr. Joseph S. Bolton, formerly of Galveston, Texas, has been transferred to Savannah where he has been appointed Medical Officer in Charge of the United States Marine Hospital.

Dr. R. P. Adams, formerly of Bethlehem, has moved to Winder to practice.

Dr. and Mrs. W. H. Clark, LaGrange, recently entertained a group of medical students just before their departure for school.

Dr. Agnew Andrews has opened offices in the Upchurch Building, Thomasville, with practice limited to diseases of the ear, nose and throat.

Dr. C. A. Witmer, Waycross, was recently elected a Fellow of the American College of Surgeons.

Dr. Henry C. Sauls, Atlanta, and Miss Elizabeth Moseley were married recently.

Dr. Thomas English McGeachy, Decatur, and Miss Frances Josephine Fletcher were married in August.

Dr. Henry Pardee Carr, Milledgeville, and Miss Marion Corrigan were married in August.

DEATHS

Dr. Ira E. C. W. Smith, Palmetto, aged 50, died September 4 of pneumonia.

Dr. Arthur Dermont Bush, Decatur, aged 58, died September 6 of multiple sclerosis.

Dr. Charles Calhoun Carson, Talbotton, aged 47, died September 28 of injuries received in an automobile accident.

Dr. Charles X. Jones, Ray City, aged 62, died August 3.

Dr. Isaac Noel Stowe, Atlanta, aged 62, died September 7.

Dr. George Sewell Clark, Hartwell, died September 25.

Dr. Claude Brantley Brookins, Gordon, aged 47, died suddenly September 25.

Dr. Sampson F. Williams, Cordele, aged 82, died September 28.

KENTUCKY

At the annual meeting of the Kentucky State Medical Association at Murray in September the following officers were elected for the coming year: Dr. Carl C. Howard, Glasgow, President-Elect; Dr. Henry G. Sandlin, Richmond, Dr. John C. Morrison, Hickman, and Dr. Edward R. Palmer, Louisville, Vice-Presidents; and Dr. Arthur T. McCormack, Louisville, re-elected Secretary. Dr. W. M. Martin, Harlan, was installed as President.

Dr. Hugh L. Bass, Louisville, and Miss Valeria Edelen were married recently.

DEATHS

Dr. Joseph Addison Sweeny, Louisville, aged 59, died July 17.

Dr. Ray Morrison Means, Shively, aged 51, died September 18 of myelogenous leukemia.

Dr. Julia A. Ingram, Louisville, aged 81, died September 23 of heart disease.

Dr. William Cicero Eubanks, Paducah, aged 65, died September 27 of heart disease.

Dr. Alvin H. Clifford, Dry Ridge, aged 85, died August 28.

Dr. Minnie Crouch Dunlap, Lexington, aged 75, died October 2 of carcinoma of the colon.

LOUISIANA

The fourth annual Fall Clinic which was to have been held in Shreveport was cancelled by the Shreveport Fall Clinic Association, owing to the fact that the Fourth District Medical Society, the Tri-State Medical Society and the Louisiana State Medical Society are all scheduled to meet in that city.

Dr. T. B. Sellers and Dr. E. L. King, both of New Orleans, held clinics in their specialty at Duke Universtiy School of Medicine, Durham, North Carolina, on November 14.

Dr. DeWitt Talmadge Milam, Monroe, and Miss Mary Lee Beckett were married recently.

Dr. Lucius George Thomas, New Orleans, and Miss Julia Ruth Gray were married recently.

DEATHS

Dr. Edward Joseph De Bergue, New Orleans, aged 62, died September 19.

Continued on page 32

AN ADVANCE IN OPIATE MEDICATION

Dilaudid

dihydromorphinone hydrochloride

Dilaudid possesses several advantages over morphine in pre-operative and post-operative procedure, acts quickly, is a stronger analgesic, and has less marked secondary effects. - - - -

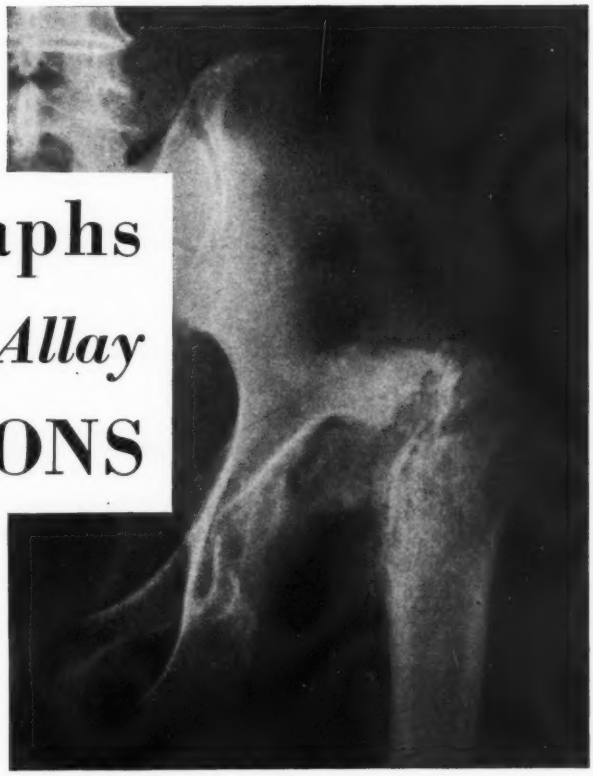
1/20 grain Dilaudid is usually given in place of 1/4 grain morphine.

Hypodermic tablets, 1/32 grain and 1/20 grain.
Oral tablets, rectal suppositories, 1/24 grain.
Ampules, 1/32 grain. Powder, readily soluble.

Further information upon request. Send your narcotic order for a sample tube of 20 hypodermic tablets 1/32 grain each.

BILHUBER-KNOLL CORP. - 154 OGDEN AVENUE JERSEY CITY, N. J.

Radiographs *Confirm or Allay* SUSPICIONS



Radiograph showing a diseased hip joint.

BONE and joint disorders often are difficult to diagnose. In childhood a suspected rachitic condition might easily be chondrodystrophy or Pott's disease . . . shortness of limb may be a congenital hip dislocation. In later ages, bone tumors and joint diseases appear which must be carefully studied and classified to be successfully treated.

Radiographs afford a sure means of prompt, accurate diagnosis of these disorders. They show the epiphyseal changes . . . the line of failing lime content . . . the band of calcification . . . any abnormalities of the joints. In cases of sarcoma, radiography affords invaluable information.

Radiograph for Accurate Diagnosis

When you suspect bone or joint disorders . . . when there is an unexplained tenderness, send your patient to a radiologist. His findings from the radiographs he makes will give you an accurate basis for diagnosis. You can proceed with a comprehensive knowledge of conditions.

NRA

● *If you will mail the coupon at the right, your name will be placed on the list for the free magazine, "Radiography and Clinical Photography."*

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347 State Street, Rochester, N. Y.

Gentlemen: Please send me the free publication, "Radiography and Clinical Photography," regularly.

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It's Sharp

Renewable Edges A Valuable Aid To Operating Technique

That is the verdict of those now using Bard-Parker Renewable Edge scissors. The expense and often unsatisfactory results of regrinding are eliminated. Renewable edges are uniformly sharp and may be replaced at the small cost of 16⅔ cents per pair. Bard-Parker scissors give you greater efficiency and economy for the same price you now pay for other stainless steel scissors. Furthermore, Bard-Parker scissors will last you far longer since they are not subject to grinding wear.

BARD-PARKER RENEWABLE EDGE SCISSORS

Stainless Steel	Prices
5½" Operating, Straight, double sharp	$2.85
5½" Operating, Straight, sharp and blunt	2.85
5½" Operating, Straight, double blunt	2.85
5½" Dissecting, Straight, Mayo type	3.35
6¾" Dissecting, Straight, Mayo type	3.85
Scissor Edges, all sizes (3 pair to package) per package	.50

BARD-PARKER COMPANY, INC.
DANBURY, CONN.

A BARD PARKER PRODUCT

NO FISHY TASTE *because they contain the* PALATABLE FRUIT AND VEGETABLE FORM OF VITAMIN A

CARITOL, *for A, alone—*

Caritol is a 0.3% solution of Carotene ($C_{40}H_{56}$), the palatable fruit and vegetable form of vitamin A, and therefore represents the form in which most vitamin A is naturally consumed by the human body.

Helps Build Resistance and Promotes Growth

Caritol, by virtue of its vitamin A activity, promotes growth and, as indicated by experimental studies, may be an aid toward the establishment of resistance of the body to infections in general. It may be prescribed alone or with other vitamin products. There is no fishy taste or bad after-taste. The cost is reasonable, too. Caritol is available in 15 c.c. and 50 c.c. dropper-top bottles and in capsules packed 25 and 50 to the box.

CAPSULES OR DROPS INSTEAD OF TEASPOONS

EASY DOSES NO FISHY TASTE NO AFTER TASTE

CARITOL-with-Vitamin D

Caritol-with-Vitamin D is the most palatable combination of vitamins A and D on the market because it contains the fruit and vegetable form of vitamin A, carotene, and a tasteless vitamin D prepared for therapeutic use by methods (Zucker process) developed at Columbia University. It is naturally palatable, not artificially flavored.

For A and D, together in Palatable Form

Caritol-with-Vitamin D is, therefore, especially recommended for patients who need both vitamins A and D, but object to the fishy taste of fish liver oils and their concentrates.

There is no fishy taste or bad after-taste, and the cost is reasonable. Available at prescription pharmacies in 5 c.c. and 50 c.c. dropper-top bottles and in 25-capsule boxes.

Prescribe these naturally palatable vitamin products — they cost no more.

Taste the carotene products yourself. Write for samples. We also offer ***Smaco Cod Liver Oil fortified with carotene and vitamin D*** for those physicians who prefer to prescribe cod liver oil. It is three times as potent in ***both*** vitamins A and D. Therefore one teaspoon is equivalent to three teaspoons of good grade cod liver oil. Improved flavor and minimum cost to patient. For vitamin D alone (for the prevention or cure of rickets), we offer ***Smaco Vitamin D***, a highly potent extract of the antirachitic principle of cod liver oil prepared by methods (Zucker process) developed at Columbia University. Ten drops equivalent in vitamin D potency to three teaspoons of good grade cod liver oil.

NRA WE DO OUR PART

S.M.A. CORPORATION CLEVELAND, OHIO

"World's Largest Producer of Carotene"

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Continued from page 28

MARYLAND

Dr. W. W. Cort, Baltimore, delivered the first lecture in the series of Smith-Reed-Russell Lectures at the School of Medicine, George Washington University, Washington.

Dr. Frank Saunders Hundley, Baltimore, and Miss Margaret Adreon Smith were married in June.

DEATHS

Dr. De Alton Burr Potter, Salisbury, aged 54, died September 12 of heart disease.

Dr. Eleanora Bennett Saunders, Towson, aged 48, died September 26.

Dr. Joseph Connor Joyce, Annapolis, aged 48, died September 22 of septic laryngitis.

MISSISSIPPI

Through the cooperation of Dr. Mildred S. Fatherree, Sanatorium, local physicians and the Coahoma County Health Department, school children of Clarksdale are being tested for tuberculosis, and follow-up examinations and roentgenograms made when needed.

DEATHS

Dr. Thomas Friend Willson, Arcola, aged 54, died September 23 of hemorrhage due to duodenal ulcer and bronchopneumonia.

Dr. Charles Martelle Coker, Eden, aged 65, died September 20 of pernicious anemia, hypertrophy of the prostate and phlebitis.

Dr. E. N. Lowe, Oxford, aged 69, died September 12 of chonic myocarditis and hypertension.

MISSOURI

The Central Institute for the Deaf, St. Louis, has had installed a phonetic clinical laboratory where the deaf and others with speech defects may see a graph of the sound vibrations of their speech and compare it with pictures of normal speech.

Dr. David Todd, St. Louis, has been elected President of the "Better Food Control of Greater St. Louis," the purpose of which organization is to encourage an educational campaign for better foods in St. Louis City and St. Louis County. Dr. Todd is President of the St. Louis Board of Education.

Dr. Caleb A. Ritter, Kansas City, who has practiced in Kansas City for forty-nine years, and an instructor at the University Medical College of Kansas City, was honored recently with a dinner given him by the alumni of the University Medical College of Kansas City.

Dr. Clarence A. Good, St. Joseph, was a guest speaker recently at a joint session of the LaFayette, Johnson and Ray County Medical Societies.

Dr. Paul F. Stookey and Dr. E. T. Gibson, both of Kansas City, were guest speakers at a recent meeting of the Nodaway County Medical Society.

Dr. P. H. Swahlen, St. Louis, has been elected Chairman of the Executive Staff of St. Ann's Hospital at St. Louis, and Dr. E. J. O'Malley, St. Louis, was elected Secretary.

The Frisco System Medical Association had about one hundred physicians in attendance upon its thirty-second annual session in Kansas City recently.

The Kansas City Tuberculosis Society had a dinner recently in observance of its twenty-fifth anniversary, with the President of the National Tuberculosis Association, Dr. Stuart Pritchard, Battle Creek, Michigan, as the guest speaker.

The St. Louis Trudeau Club has elected the following officers for the coming year: Dr. Arthur E. Strauss, President; Dr. Bryan J. McGinnis, Vice-President; Dr. George S. Wilson, Secretary-Treasurer; and Dr. H. I. Spector, Chairman of the Program Committee; all of St. Louis.

Dr. Malvern B. Clopton, St. Louis, has been elected to succeed the late Dr. Harvey G. Mudd as Chief of the Staff of St. Luke's Hospital, St. Louis; Dr. Omar Seven, St. Louis, was re-elected Assistant Chief of Staff; and Dr. Walter Fischel, St. Louis, was reelected Secretary.

Continued on page 34

A Pure, Palatable, Carbonated

PREPARED WATER

THERE are many conditions, no doubt, where you will want your patient to increase his daily intake of water.

In such cases, why not suggest the use of Kalak Water, the palatable, carbonated alkaline water prescribed by physicians for over twenty years.

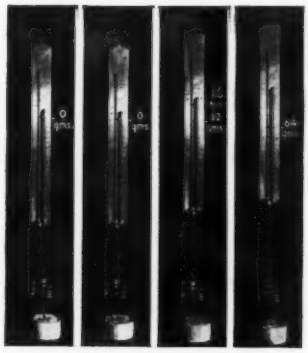
Kalak Water is made of carbonated distilled water and chemically pure salts of calcium bicarbonate, sodium chloride, sodium phosphate and bicarbonates of magnesium, potassium and sodium.

Kalak

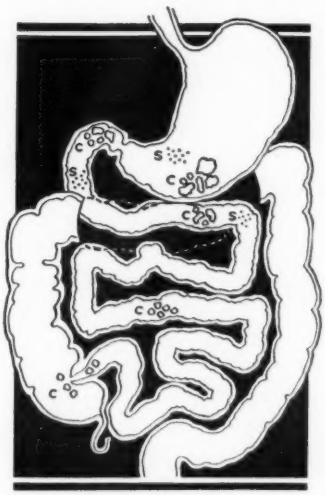
CURD TENSION

- AND INFANT FEEDING -

ITS · EFFECT · UPON · THE · ASSIMILATION · OF SALTS



BREAST MILK | SIMILAC | POWDERED MILK | COW'S MILK



C—Cow's milk S—Similac
Schematic drawing of the relative size of the curds of cow's milk and Similac vomited by six weeks old puppies after one-half hour's ingestion.

"THE mineral salts play a very complicated part in digestion because they are not only absorbed by the intestines but also may be re-excreted into the digestive canal." [1]

"The mineral salts are of even greater importance in infancy than in later life because of the rapid growth of the bony structure . . . The salts are also necessary for cell growth and are important constituents of the blood and digestive juices, facilitating secretion, absorption and excretion." [2]

Some of the important mineral salts are encased within the large tough curds formed from cow's milk, and only those salts that are not encased in the curds are available for metabolism.

The curds formed from SIMILAC are small and flocculent, registering zero on the tensiometer, as shown in illustration, hence the mineral salts of SIMILAC are available for metabolism.

The salts of the cow's milk used in the preparation of SIMILAC are rearranged, particularly with reference to calcium, sodium, and potassium, as well as phosphorus and chlorine. SIMILAC has a salt balance that cannot be obtained in the ordinary milk dilutions or modifications as made in the home or laboratory.

The finer the curd the greater the surface area. The greater the surface area the more exposed are the fats, carbohydrates, proteins and salts to the digestive enzymes. Result . . . a more complete utilization of the food elements.

[1] Morse and Talbot: Diseases of Nutrition and Infant Feeding, pg. 59.
[2] Marriott: Infant Nutrition, pg. 43.

Samples and literature will be sent on receipt of your prescription blank.

SIMILAC—Made from fresh skim milk (casein modified); with added lactose, salts, milk fat and vegetable and cod liver oils.

M & R
DIETETIC LABORATORIES, INC.,
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A Valuable Aid In Building Sturdy Bodies

Horlick's, prepared with water, has been shown in tests made at a prominent University hospital to be exceedingly beneficial in promoting better appetite and consistent gains in weight in children. When 2½ to 3 heaping teaspoonfuls are mixed with a glass of milk, the nutritive energy value of the milk is doubled, and the child not only is pleased with the flavor, but the physician is pleased, too, with the results.

Horlick's Malted Milk Corp.
Racine, Wis.

Please send me.....individual weight charts for pre-school children and.....charts for school children, with spaces for physician's medical examination report.

S. M. J.

"DO UNTO OTHERS"

THIS will be the happiest Christmas for many people. Laughter will have a new ring, voices a new confidence. Share some of your joy by using Christmas Seals on your letters, packages, gifts, and cards. The gay little stamps will brighten your message. The funds they provide will help prevent, find, and cure tuberculosis throughout the year.

The National, State *and* Local Tuberculosis Associations *of the* United States

BUY CHRISTMAS SEALS

Continued from page 32

Dr. Walter E. Gibson has moved from Portageville to Obion, Tennessee, where he has opened offices to practice.

Dr. Hugh C. Nickson, Independence, and Miss Carolyn Woodward Berridge were married recently.

DEATHS

Dr. Randall Solon Tilles, St. Louis, aged 50, died September 14 following an operation on the gallbladder.

Dr. John L. Ingram, St. Louis, aged 72, died August 15 of heart disease.

Dr. J. Harry Coates, St. Louis, aged 51, died September 29 following an operation for appendicitis.

Dr. William Wallace Gray, St. Joseph, aged 61, died October 7 of cerebral hemorrhage.

Dr. August C. Wunnicke, Kansas City, aged 66, died September 26 of uremia, pelvic abscess and carcinoma.

Dr. Samuel Hahnemann Anderson, Kansas City, aged 83, died September 18 of chronic myocarditis.

Dr. John P. Green, Eldorado Springs, aged 77, died September 23 of cerebral hemorrhage.

Dr. Samuel Day, Holden, aged 86, died August 6 of chronic myocarditis.

Dr. James M. Billings, Lebanon, aged 89, died August 28.

Dr. Harper Miles LaRue, Kansas City, aged 56, died June 2.

NORTH CAROLINA

The Ninth District Medical Society at a recent meeting in Mooresville elected the following officers for the coming year: Dr. J. Y. Templeton, Mooresville, President; Dr. C. B. Herman, Statesville, Vice-President; Dr. J. W. Davis, Statesville, reelected Secretary-Treasurer; and Dr. C. R. Hedrick, Lenoir, Assistant Secretary.

Dr. James W. Davis, Statesville, has been appointed to succeed the late Dr. M. R. Adams as Councilor of the Ninth District Medical Society; and has also been appointed a member of the Executive Committee of the North Carolina Hospital Association.

Dr. Joseph A. Elliott, Charlotte, has opened offices in the Professional Building for an individual practice limited to dermatology and syphilology.

Dr. L. C. Todd, Charlotte, has moved his laboratory into new quarters in the Professional Building, where he will limit his practice to clinical pathology.

Dr. R. E. Fox, Asheville, was awarded a Rockefeller Foundation scholarship for a year's postgraduate public health work at Harvard University.

Dr. Isaac H. Manning, formerly Dean of the University of North Carolina Medical School, has resigned as Dean, to continue as Professor of Physiology.

Dr. Charles S. Mangum, Professor of Anatomy at the University of North Carolina Medical School, has succeeded Dr. Manning as Dean of the University.

During November the following clinics were presented at Duke University School of Medicine and Hospital: one by Dr. G. C. Weil, Surgeon-in-Chief, Mercy Hospital, Pittsburg, Pennsylvania; Dr. C. C. Coleman, Richmond, Virginia; Dr. T. B. Sellers and Dr. E. L. King, both of New Orleans, Louisiana; Dr. C. R. Murray. Associate Professor of Surgery in charge of the Bone and Joint Division, Columbia University School of Medicine and the Presbyterian Medical Center, New York; and Dr. Alexander Schaffer, Baltimore, Maryland.

Dr. J. R. Saunders, formerly of Morganton, where he was Assistant Physician at the State Hospital, has located at Angier and entered private practice.

Dr. Walter Reece Berryhill, a native of Charlotte, has been appointed University Physician at Chapel Hill.

Dr. A. C. McCall, Asheville, was elected President of the Tenth District Medical Society at its meeting in Burnsville in September.

Dr. G. W. Murphy, Asheville, was recently elected a member of the American Roentgen-ray Society.

Dr. George Washington Holmes, Winston-Salem, and Miss Lucille Stokes Field were married in September.

Dr. Verne Strudwick Caviness, Raleigh, and Miss Alice Hill Webb were married in October.

Dr. Yates S. Palmer, Valdese, and Miss Lillian Allen Wrigglesworth were married in September.

Dr. Sigman Van Lewis, Middlesex, and Miss Ola Elizabeth Caudle were married recently.

Dr. John L. Winstead and Miss Margaret Fleming, both of Greenville, were married in September.

Dr. William Augustus Anthony, Gastonia, and Miss Katherine Josephine Williams were married recently.

Dr. Wade Thomas Parker, Fayetteville, and Miss Margaret Frances Blue were married recently.

Continued on page 36

MELLIN'S FOOD

IS A CARBOHYDRATE—

and more

It contains 58.9% maltose and 20.7% dextrins.

It contains 10.3% protein, extracted from the wheat and barley which are its chief ingredients.

It contains 3.9% ash.

It tends to promote normal bowel action.

MELLIN'S FOOD COMPANY

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Literature and Samples of Mellin's Food Gladly Supplied — to Physicians Only.

Mellin's Food: Produced by an infusion of Wheat Flour, Wheat Bran and Malted Barley admixed with Potassium Bicarbonate — consisting essentially of Maltose, Dextrins, Proteins and Mineral Salts.

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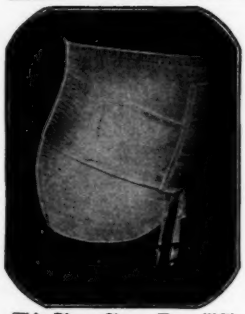
Binder and Abdominal Supporter



Gives perfect uplift and is worn with comfort. Made of Cotton, Linen or Silk, washable as underwear.

Three distinct types of Storm Supporters — many variations of each type.

This Photo Shows Type "N"

STORM supporters are made for all conditions needing abdominal uplift. Ptosis, Hernia, Pregnancy, Obesity, Relaxed Sacro-Iliac, Articulations, Kidney Conditions, Post-Operative Support, etc.

Each Belt Made to Order **Ask for Literature**

KATHERINE L. STORM, M. D.
Originator, Owner and Maker
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"Thanks for Health"

Exuberant youth scorns caution in the joy of living. Health frequently is the price of that gesture. The chief foe of youth is tuberculosis. It can be prevented and cured, yet it still is the greatest cause of death among children between 5 and 20. Thousands of adults, remembering timely aid from their local tuberculosis association, can look with gratitude at Christmas Seals and say, "Thanks for Health."

***The* National, State *and* Local Tuberculosis Associations *of the* United States**

***Buy* CHRISTMAS SEALS**

Continued from page 34

DEATHS

Dr. Marcus T. Hickman, Hudson, aged 51, died September 18 of a ruptured appendix.

Dr. Thomas Meares Green, Wilmington, aged 54, died September 14 of myocarditis.

OKLAHOMA

Dr. and Mrs. Fred C. Rewerts, Bartlesville, have gone to Europe where Dr. Rewerts will spend the next four months taking postgraduate work in Vienna.

Dr. William Lawrence Mattison, Calvin, and Miss Lois Juanita Martindale were married in the summer.

DEATHS

Dr. Robert Edwin Wilson, Davidson, aged 62, died July 24 of pneumonia.

Dr. Peter Goosen, Enid, aged 78, died August 30 of cerebral hemorrhage.

Dr. Luther Mathis, Fairview, aged 61, died July 19.

Dr. Andrew Hunter Sullivan, Sulphur, aged 59, died July 25 of heart disease.

Dr. Julius H. Cameron, Healdton, aged 48, died September 6 of cerebral hemorrhage.

Dr. Claude Allen Thompson, Muskogee, aged 58, died October 2.

SOUTH CAROLINA

The Seventh District Medical Association met at Kingstree in September and elected the following officers for the coming year: Dr. D. O. Winter, Sumter, President; Dr. George L. Dickson, Manning, Vice-President for Clarendon County; Dr. Oscar Bruorton, Georgetown, Vice-President for Georgetown County; Dr. A. Brown, Vice-President for Lee County; Dr. W. H. Burgess, Sumter, Vice-President for Sumter County; and Dr. C. D. Jacobs, Kingstree, Vice-President for Williamsburg County. Dr. C. B. Epps, Sumter, will continue to serve his present term as Secretary-Treasurer.

Dr. Robert B. Taft, Charleston, was recently elected to Fellowship in the American College of Radiology.

Dr. Arthur Marvel Lassek has come to Charleston from Northwestern University, Chicago to succeed Dr. William Fowke Ravenel Phillips as Professor of Aanatomy of the Medical College of the State of South Carolina.

Dr. B. R. Baker, Charleston, has been attending the clinics at Rochester, Minnesota.

Dr. Lawrence H. McCalla, Greenville, has recently limited his practice to general surgery.

Dr. Lonita Boggs has located in Greenville, with practice limited to pediatrics.

Dr. William H. S. Speissegger, Charleston, and Miss Laura Agnes Saville were married recently.

Dr. Oscar David Garvin, Jr., Ridge Spring, and Miss Evelyn Margaret Williamson were married recently.

Dr. Leland J. Brannon, Columbia, and Miss Viola Mobley were married recently.

DEATHS

Dr. Robert Lee Marchant, Greer, aged 67, died September 8 of acute dilatation of the heart.

Dr. James Drew Ingram, McBee, aged 55, died September 15 of pneumonia.

Dr. Haude T. Dacus, Williamston, aged 54, died September 13.

TENNESSEE

The following physicians have been elected to serve as officers for the East Tennessee Medical Society for the coming year: Dr. J. A. Hardin, Sweetwater, President; Dr. E. T. Brading, Johnson City, Dr. H. A. Roberts, Rockwood, Vice-Presidents; and Dr. H. A. Calloway, Maryville, Secretary-Treasurer.

Dr. J. E. Mathis has located at Dickson where he has opened a private office, having resigned his position at the Eastern State Hospital, Knoxville.

Dr. Philip H. Levinson, Chattanooga, has opened offices in the Medical Arts Building, specializing in internal medicine and diagnosis.

Dr. R. M. Workman has located at Clarksville, after completing his internship at St. Thomas Hospital, Nashville.

Dr. H. P. Clemmer has opened offices at Milan.

Dr. William A. Wiley has located at Kingsport to practice

Continued on page 38

DRYCO POLICY AND MEDICAL ETHICS

An Open Letter to the Medical Profession

FOR many years we have been telling the story of Dryco, and later that of Irradiated Dryco, to the medical profession. Physicians have shown a gratifying interest in its scientific background and its practical success.

IRRADIATED Dryco has always been advertised and marketed under a strictly ethical policy. We have not considered it either necessary or becoming to stress this fact in medical journal advertising, since it has always been maintained and could be attested to at any time or place.

WE HAVE solicited your consideration of Dryco as an outstanding food for babies, not because we do not advertise to the laity but because Dryco is a valuable help in feeding infants who have for one reason or another been deprived of breast milk—the oldest and best of all baby foods.

WE ASK your consideration of Dryco because of its years of successful clinical history and its constant scientific progress —not *merely* because we confine our advertising exclusively to the medical profession. We believe physicians place a higher value upon the usefulness and dependability of a product than upon any advertising policy.

THEREFORE, *we base and have always based our medical journal advertising on scientific facts and clinical findings on Irradiated Dryco as a food for infants.*

The DRY MILK COMPANY, INC.

205 EAST 42nd STREET, DEPT. S.M., NEW YORK, N. Y.

NRA MEMBER U.S. WE DO OUR PART

Continued from page 36

medicine, after completing four years internship at Kings County Hospital, New York.

Dr. J. M. Miller, formerly of Huntsville, Alabama has located at Clarksville, with practice limited to diseases of the eye, ear, nose and throat.

Dr. George Carpenter, Nashville, has moved into new offices in the Bennie-Dillon Building, with practice limited to orthopedic surgery.

Dr. L. L. Highsmith, Kingsport, Dr. T. J. Stockard, Lawrenceburg, and Dr. A. J. Willis, Embreeville, have completed special postgraduate courses at Vandervilt University School of Medicine and have resumed their practice.

Dr. Claude Dinkins Johnson and Miss Rosalie Kelly, both of Nashville, were married recently.

Dr. Perry A. McGinnis, Pressmen's Home, and Miss Evelyn Olivia Esswein were married in September.

Dr. John Wesley Hocker, Chattanooga, and Miss Glenna Burke Strickland were married in the summer.

Deaths

Dr. Andrew Johnson Isham, Maryville, aged 70, died September 1 of pneumonia.

Dr. R. Carson Stone, Russellville, aged 72, died September 12.

Dr. Alexander B. McTeer, Rockford, aged 76, died August 12 of heart disease.

Dr. L. L. Janeway, Whitewell, aged 83, died May 15 of lobar pneumonia and a hip fracture.

Dr. Charles A. Loring, Smithville, aged 67, died in September.

Dr. Samuel Black Hall, Clinton, aged 69, died September 30 of cerebral arteriosclerosis.

Dr. Aaron David Heineman, Memphis, aged 63, died September 23 of uremia and chronic interstitial nephritis.

Dr. W. R. Settle, Knoxville, aged 66, died August 5.

TEXAS

The Texas Pediatric Society met in San Antonio at the Gunter Hotel on October 28.

The Texas Surgical Society met in Fort Worth in October for its semi-annual session.

Dr. P. M. Girard, Dallas, has gone to Europe for several months of postgraduate study in orthopedic clinics and hospitals on the Continent.

Dr. A. M. Clarkson, Dallas, member of the Dallas Department of Health, has received a year's scholarship in public health work from the Rockefeller Foundation.

Dr. Allen C. Hutcheson, Houston, has been appointed to succeed the late Dr. H. K. Read as Supervisor of Hygiene for the Houston public schools.

Dr. H. G. Walcott, Dallas, has resumed his practice after an absence on account of ill health.

Dr. W. W. Bondurant has moved from Galveston to San Antonio.

Dr. J. R. Dillard has moved from Big Springs to San Antonio.

Dr. E. A. Jones has moved from Stinnett to Borger.

Dr. J. A. Martin has moved from Fort Stockton to Longview.

Dr. J. Walter Smith has moved from Corpus Christi to Roswell, New Mexico.

Dr. N. J. Smith has moved from Robert Lee to Anson.

Dr. Joe Frank Adcock and Mrs. Annette Haney, both of Sanatorium, were married recently.

Deaths

Dr. Dero E. Seay, Dallas, aged 59, died in November.

Dr. Horace G. Wootten, Clarksville, aged 60, died May 6 of pneumonia following an operation.

Dr. Owen Riley Marshall, Moody, aged 61, died September 9 of heart disease.

Dr. Robert Harry Daniel, Dallas, aged 58, died September 28 of coronary occlusion.

Dr. Henry Marshall Harrison, La Porte, aged 81, died September 22 of senility.

Dr. Wade Jesse Lane, Marshall, aged 73, died June 13 of cerebral hemorrhage.

Dr. Claude O. Harper, Fort Worth, aged 61, died August 22 of heart disease.

Dr. John L. Van Dyke, Paris, aged 75, died September 9 of cerebral hemorrhage.

Dr. Andrew Franklin Matthews, Brookeland, aged 72, died September 22 of pneumonia.

Dr. William Joseph Doss, Whitewright, aged 64, died June 24.

Continued on page 40

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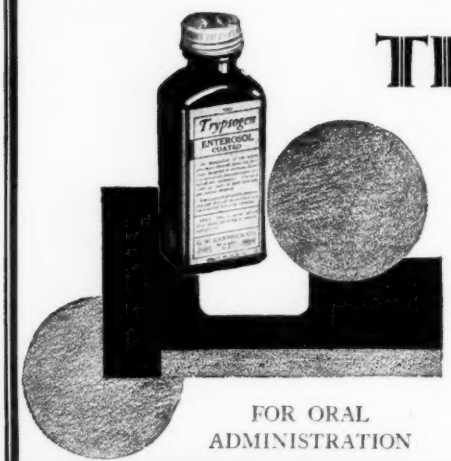

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Continued from page 38

Dr. Charles Anderson Lanier, Henderson, aged 65, died in August.

VIRGINIA

The Clinch Valley Medical Society met at Tazewell in September and elected the following officers for the coming year: Dr. J. M. Dougherty, Nickelsville, President; Dr. J. H. Hagy, Imboden, Dr. S. O. Massey, Amonate, Vice-Presidents; and Dr. C. B. Bowyer, Stonega, reelected Secretary-Treasurer.

The Roanoke Academy of Medicine held its first meeting of the new year in October and elected the following officers: Dr. E. C. Ambler, President; Dr. George Hurt, First Vice-President; Dr. Paul Davis, Second Vice-President; and Dr. Mortimer H. Williams, Secretary-Treasurer; all of Roanoke.

The Mid-Tidewater Medical Society held its quarterly meeting at Millers Tavern in October and elected the following officers for the coming year: Dr. E. L. W. Ferry, Millers Tavern, President-Elect; Dr. E. T. Sandberg, Mathews, Dr. James W. Smith, Gloucester, Dr. W. E. Croxton, West Point, Dr. J. M. Gouldin, Tappahannock, Dr. M. H. Eames, Quinton, Dr. L. O. Powell, Seaford, Dr. E. C. Cobb, Ruthers Glen, Dr. H. F. Hoskins, Saluda, Vice-Presidents; Dr. M. H. Harris, West Point, Secretary; and Dr. James D. Clements, Ordinary, Treasurer. Dr. R. R Hoskins, Mathews, is the incoming President.

The South Piedmont Medical Society has elected the following officers for the coming year: Dr. F. O. Plunkett, Lynchburg, President; Dr. G. T. Harris, Madison Heights, Dr. H. W. Pritchett, Danville, Dr. W. C. Brann, South Boston, Dr. W. R. Martin, Charlotte C. H., Dr. T. G. Hardy, Farmville, and Dr. Ray A. Moore, Farmville, Vice-Presidents; and Dr. George A. Stover, South Boston, re-elected Secretary-Treasurer.

The Post-Graduate Medical Society of Southern Virginia meeting and a clinical meeting of the physicians of the Fourth Councilor District were held in conjunction at Petersburg in October, and the following officers were elected: Dr. W. D. Prince, Stony Creek, President; Dr. E. L. Kendig, Victoria, Dr. J. A. B. Lowry, Crewe, Vice-Presidents; and Dr. Herbert C. Jones, Petersburg, Secretary-Treasurer.

Dr. Randolph L. Anderson, Richmond, on the teaching staff of the Medical College of Virginia, has moved to Charleston, West Virginia, and opened offices in the Professional Building with practice limited to orthopedic surgery and fractures.

Dr. M. Pierce Rucker, Richmond, was recently elected President-Elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons.

Dr. A. S. Richardson, formerly of O'Keeffe, West Virginia, has located at Grundy, and has built the Grace Richardson Hospital, a thirty-bed institution.

Dr. Charles William Scott has located at Newport News and will take up private practice.

The "MESCO" Laboratories manufacture the largest line of Ointments in the world. Sixty different kinds. We are originators of the Professional Package. Specify "MESCO" when prescribing ointments. Send for lists.

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. The Nursing School of the Mary Washington Hospital at Fredericksburg has been discontinued and the sixteen students have been transferred to the University Hospital at Charlottesville.

Dr. Hyman Cantor, Petersburg, attended the sixth annual graduate fortnight of the New York Academy of Medicine.

Dr. A. Micklem has moved from Alberene to Rockfish.

Dr. Claude A. Nunnally has located at Fredericksburg for the practice of internal medicine.

Dr. Carl W. Shaffer has located at Alexandria with offices at 217 South Pitt Street.

Dr. Clifton Ross Titus and Miss Mildred Carolyn Mitchell, both of Bassett, were married in October.

Dr. Walter Lewis Nalls and Miss Aileen Lee Williams, both of Richmond, were married in October.

Dr. Howe Reese Coleman, Jr., Lexington, and Miss Virginia Hightower were married recently.

Dr. Robert Buckley and Miss Maxine Elizabeth Frix, both of Richmond were married recently.

Dr. Robert Preston Hawkins, Jr., Clifton Forge, and Miss Grace Vernon Reynolds were married recently.

Dr. Garland Norfleet Carter, Boydton, and Miss Susan Elizabeth Carpenter were maried recently.

Dr. Bernard Candler Grigsby, Lebanon, and Miss Mary Helen McKissick were married recently.

Dr. Charles Marsden Irvin, Roanoke, and Miss Ruby Newman Hammer were married in the summer.

Dr. Frederick Thomas Amiss and Miss Ruth Ann Broyles, both of Luray were married June 17.

DEATHS

Dr. Herman Evant Jones, Roanoke, aged 72, died August 17 of acute hepatitis and nephritis.

Dr. Benjamin Franklin Iden, Manassas, aged 89, died September 22 in a Washington, D. C., hospital as the result of injury received when kicked by a horse.

Dr. John Staige Davis, University, aged 67, died September 21.

Dr. Alpheus Hartley Wood, Emporia, aged 35, died September 28.

Dr. Henry Armistead Bullock, Richmond, aged 42, died October 2.

Dr. Joel Crawford, Yale, aged 73, died October 14.

WEST VIRGINIA

The Cabell County Medical Society, at its meeting in October, elected the following officers for the coming year: Dr. William W. Strange, President; Dr. I. I. Hirshman, Vice-President; Dr. Edwin Matthews, Secretary; and Dr. R. M. Bobbitt, reelected Treasurer; all of Huntington.

Dr. Sobisca S. Hall, Fairmont, was recently rewarded with a life membership in the American College of Surgeons at the annual meeting of the College in Chicago, this being in the nature of an award in recognition of Dr. Hall's case histories and records, which took highest honor before the meeting of the College.

The Hospital Association of West Virginia held its eighth annual meeting at Clarksburg in October and elected the following officers for the coming year: Dr. T. K. Oates, Martinburg, President; Dr. James R. McClung, Richwood, First Vice-President; Dr. E. F. Heiskell, Morgantown, Second Vice-President; and Mr. Charles W. Warner, Charleston, Secretary-Treasurer.

Dr. A. S. Richardson, formerly of O'Keefe, has moved to Grundy, Virginia.

Dr. Randolph L. Anderson has located in Charleston with offices in the Professional Building, where he will limit his practice to orthopedic surgery and fractures.

Dr. Arthur S. Jones, Huntington, and Miss Fanny Harrison Mills were married in October.

Dr. Russell Felts Hufford, Welch, and Miss Mayme Eleanor Knight were married June 17.

Dr. Paul Lawrence Dent, Quinwood, and Miss Willada Hall Rickman were married recently.

DEATHS

Dr. Alvin McClung, Beverly, aged 43, died May 13 of cardiac infarction.

Dr. Joseph Ditman Lawrence, Sprigg, aged 62, died August 25 of angina pectoris.

Dr. Anderson P. Jones, Pennsboro, aged 80, died September 9 of coronary embolism.

Dr. Amos E. Calvert, Parsons, aged 70, died August 17 of ascites.

Dr. Amos E. Smith, Walkersville, aged 60, died July 31.

Dr. Girlonza L. Wyatt, White Sulphur Springs, aged 55, died October 1 of angina pectoris.

Dr. John A. Garrett, Reader, aged 87, died August 20.

Dr. George L. Peirce, Elkins, aged 61, died September 26 following a short illness of diphtheria.

Klim message of the month

Your Own Klim Formula VS. A "Shot-Gun" Infant Food?

Every baby is a special baby. Every baby is, therefore, an individual feeding problem which your own prescription alone can solve. Your own formula—based on the condition of the infant—one that takes into consideration the baby's digestive ability as well as its most urgent needs is the best assurance of success in infant feeding.

KLIM is a safe, pure, uniform milk, easily digested and assimilated and readily adaptable to your prescriptions.

AUTHORITY: "As the doctor says, the multiplication of complicated foods through the interests which push them for commercial reasons is out of proportion to their value. For the general practitioner to adapt the formula to abnormal conditions from a printed card is difficult. Since the compound is fixed, it is impossible to vary the amount of a single ingredient without varying the amount of all the other contained ingredients by the use of either dilution or concentration. Scientific medication with "shot-gun" prescriptions is no more impossible than scientific feeding with "shot-gun" proprietary infant foods."

(Dr. Henry E. Irish, discussion of Dennett's paper: "The Teaching of Infant Feeding," Arch. Pediat., Vol. XLVIII, No. 4, April, 1931).

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Wrong way—Mother registering disgust, distaste, etc.

The mother who wrinkles her nose and "makes a face" of disgust as she measures out cod liver oil is almost certain to set the pattern for similar behavior on the part of her baby.

No. 1 of a series

WHAT EVERY WOMAN DOESN'T KNOW is that psychology is more important than flavoring in giving cod liver oil to children. Some mothers fail to realize, so great is their own distaste for cod liver oil, that most babies will not only take the oil if properly given but will actually enjoy it. Proof of this is seen in orphanages and pediatric hospitals where cod liver oil is administered as a food in a matter of fact manner, with the result that refusals are rarely encountered.

Most babies can be taught to take the pure oil if, as Eliot points out, the mother looks on it with favor and no unpleasant associations are attached to it. If the mother herself takes some of the oil, the child is further encouraged.

The dose of cod liver oil may be followed by orange juice, but if administered at an early age, usually no vehicle is required. The oil should not be mixed with the milk or the cereal feeding unless allowance is made for the oil which clings to the bottle or the bowl.

If given cold, cod liver oil has little taste, for the cold tends to paralyze momentarily the gustatory nerves. As any "taste" is largely a metallic one from the silver or silver-plated spoon (particularly if the plating is worn), a glass spoon has an advantage.

SOME authorities recommend that cod liver oil be given in the morning and at bed time so as to assure an appetite for the oil, while others prefer to give it after meals in order not to retard gastric secretion. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. Mead's Newfoundland Cod Liver Oil, of minimum acidity and prepared from fresh healthy livers, is well tolerated by infants and children and is palatable without flavoring. *(To be continued)*

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